

# THE IRON AGE

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Pennsylvania Railroad car order will be much larger than the 20,000 originally proposed. The Great Northern order for 40,000 tons of rails and the Northern Pacific contract, variously estimated at 35,000 to 50,000 tons, are about to be closed. The South Carolina Railroad is in the market for 4400 tons.

Steel car wheel business has been good, recent orders being placed for 11,000. The Pennsylvania Railroad is reported to be figuring on 20,000.

Prices for structural steel are stiffening. Fabricators have been notified that they cannot safely base their estimates on less than 1.15c. for shapes, and some mills are asking more than this on manufacturers' orders for plain material. An Eastern mill has taken a contract for 10,000 tons of shapes for car work. The Hub building at Chicago, 6000 tons, and the Barr building, St. Louis, 10,000 tons, have been closed.

Plate mills have been helped not only by car works business but by the large business closed and pending for shipyards. Seaboard shipbuilders are so well filled that they are by no means eager for Government work. On the lakes there is figuring for three or four freighters and the lake yards may build several boats for the coastwise trade.

The foundry pig iron market has slowed down after two weeks of heavy buying at prices over which the furnace companies were far from cheerful. Southern iron has come up to a \$10, Birmingham, basis for No. 2 and some sellers are asking more for the first half of 1912. The recent buying of basic iron in the Pittsburgh district, about which reports have varied, amounted to 30,000 tons at \$12.10 and \$12.15 at furnace.

#### Getting Steel Costs Down

The inroad the unlimited competition of the past six months has made upon the profits of iron and steel manufacturers has been dwelt upon as though it were absolutely without mitigation. Comparisons have been made with the low levels in other times of severe competition and it has been shown that in more than one product recent prices have been unprecedented for lowness, taking into account the higher wages and the higher raw material costs of to-day.

What has been ignored in all the outcry over the disappearance of profits in steel is the extent to which ways have been found to lower costs of manufacture. It has been assumed, since wage rates were not reduced, that, as so many dollars a ton have been cut off the selling price, earnings have suffered by just that much. Such a view takes no account of an economy campaign that has been under way in the steel industry, one that has been as effective as it has been unadvertised. Referring first to the Steel Corporation as the largest producer, it is known that a movement for increased efficiency in every department of every subsidiary was undertaken early in the present year and that the results have figured in no small way in the balance sheets of the past six months. With all that had been previously accomplished through committee work, through liberal expenditure for labor saving equipment, through the saying of by-products and through the standardizing of operations, tending to pull the efficiency at all plants in a given line up to that of the best—the work put on the problem under the pressure of this year's necessities has brought excellent results. As is only too well known, this has been no

year for spending money on new construction, but the Steel Corporation has made many small appropriations for plant changes or for new equipment where such expenditure would increase output and reduce unit cost.

In one large independent company the reductions in cost this year, without any reduction in the wage rate, have made up for no small part of the decline in the price of its product. One expedient resorted to, when, after serious consideration of wage reductions, it was decided to postpone such action, was a horizontal reduction in the number of men in all operating departments. The situation was put squarely up to managers, superintendents and foremen, with the urgent necessity of reducing cost by getting out the same product with a smaller force. It was not many weeks before ways were found, by increasing efficiency all along the line, to more than equal the former output.

It will be seen, when the reports of the various steel companies for 1911 can be studied, that the industry has only repeated familiar history in enforcing economies under stress of severe competition. It has found some compensation for conditions which appear all calamitous, in being able to set its house in order for the new régime—one under which so-called normal prices for iron and steel products will be several dollars a ton below the cent-and-a-half level of recent years for bars, plates and structural shapes.

#### Scale Contracts in the Iron Trade

The making of a scale contract has long been a favorite recourse in the iron trade and its allied industries when buyer and seller wished to tie up with each other for a period of time and yet avoid the prospect of loss to the one party or the other through a material change in the market price of the commodity involved. These contracts may be divided into two classes, the one based upon the price of the commodity ruling in the open market from time to time, and the other basing the price of the given commodity upon the price of some other commodity. Thus contracts have been made for the delivery of pig iron, a tonnage within a specified maximum and minimum per month, to be paid for at the ruling price in the month, or in the month preceding the month of delivery. Again, steel billets and sheet bars have been sold upon scale contracts, the basis being not the price of steel in the open market, but the price of pig iron. The favorite form for such contracts has been that of providing a variable "spread" between the pig iron and the steel, this spread increasing as the price of pig iron advances. An unusual contract was made a few years ago, involving a large tonnage, and in this case pig iron was bought, to be paid for in accordance with the fluctuations of the billet market. Particularly in recent years, Connellsville furnace coke has frequently been sold on a "ratio" basis, the settlement price from month to month being a predetermined fraction of the monthly average price of Bessemer or basic pig iron. What economic function do these sliding scale contracts perform? It is true they give the seller an advantage if the market advances, and they give the buyer an advantage if the market declines. In some cases such protection is needed. When both pig iron and coke are high priced, for instance, the furnaceman has excellent reason for making such a coke contract, because he is thus assured a supply of coke for the period, and at the same time he is protected in case the mar-

ket declines. This is to the advantage of both parties. The seller profits, in that when the market is high he can sell coke more readily on a scale contract than at a flat price; if the market declines, the furnace can continue operating and taking the coke, whereas if hung up on a high coke price it might be forced to blow out.

While scale contracts appear simple, a great many complications can arise in making and interpreting them, and they should promise great benefits to warrant their adoption. It is questionable whether in the long run they do. If they belong to the class in which the price is made dependent upon the price of some other commodity, they are very likely to carry the settlement price above or below the prevailing market price of the commodity sold. In the case of coke, very complicated contracts have sometimes been drawn to avoid this distortion, the ratio of coke to pig iron varying as the price of pig iron varies, and a minimum price for the coke being introduced. If on the other hand they belong to the class in which the adjustment is made according to the prevailing market price of the commodity traded in, they are confessedly a makeshift because they are impossible of general adoption. Were all the tonnage of the market thus handled, there would be nothing left to make a market price. Something of this sort has actually occurred in recent months in the case of a number of sheet bar contracts, the open market price resting upon such an uncertain foundation that consumers objected to being governed by it; and the justice of their claim was recognized by producers consenting to other means of settlement. In this case the scale contract system became topheavy.

In the willingness of the trade to make these scale contracts in so many instances, despite their obvious drawbacks, may possibly be found an argument in favor of the suggestion which has been so generally criticized, that a government board should actually regulate or fix prices. The scheme has been called chimerical; yet it really would require no great stretch of the imagination to conceive a government board, armed with adequate information, fixing prices of certain commodities with as much justice as is now done through the medium of some of the scale contracts which find favor with many buyers and sellers.

If the definite trend of these various scale contracts were to mitigate the extremes of fluctuation in the market they would be of economic advantage; but it is patent that they do not do so, for two reasons. In the first place, the effort is made in arriving at the terms to make them duplicate if possible that which has been found to occur in actual practice. Thus in fixing a coke-to-pig iron ratio, historic prices are scrutinized to ascertain how coke has usually advanced when pig iron has advanced. Thus the contract aims to correspond with market fluctuations, not to mitigate them. In the second place, when a portion of the total tonnage is taken out of the market in which periodic bartering occurs, the remainder must bear the entire brunt of increases and decreases in the total demand, and thus the price tends to fluctuate more than were the entire tonnage involved in the bartering.

While in the iron trade the scale contract has not been found of such striking advantage as to make its adoption at all general, it is interesting to note that in certain branches of the metal trade the periodic settlement basis has been found of great convenience. We refer to the settlement upon drosses, particularly from

tin and spelter. Practice varies at different plants, so that drosses are not all alike, though the general method of production may be the same. Refiners are not equally easy to get along with, and it becomes desirable for both the manufacturer conducting tinning or galvanizing operations and the refiner of drosses to select in advance those with whom they will do business. The fluctuations in the new material market make this extremely difficult if settlement is to be at a flat price, but the difficulty vanishes when the contract provides that settlement shall be made for each carload on the basis of a fixed percentage of the price of new metal upon the date of shipment. The refiner must sell his product in relation to this market, while the producer finds the price realized upon the dross varies according to the price he has paid for the metal which makes the dross; and thus both parties are enabled to pursue their business, confident that the price paid and received from time to time will be in accord with the prevailing conditions. In this case the inherent advantage of the arrangement is obvious.

#### The Coming Demand for Machine Tools

When the trade shall have revived in a large way, an important element in the machinery market will be that of replacements. A very great percentage of the equipment of American machine shops, taking the country over, at the end of the last very prosperous period, could not even then be classed as really modern. Since that time buying for the most part has been confined to immediate needs resulting from extensions of business enterprises. If an older type of machine could be made to do work even in a moderately satisfactory manner, it has usually been called into use for the purpose, for the conservation of financial resources has been carried out in every possible way since the middle of 1907. In other words, four and one-half years have elapsed since shop owners have been modernizing the equipment of their plants. What was old then is still nearer obsolete now. There are some exceptions to the rule, of course, the most notable being the automobile builders whose business has averaged so great that they could afford what all manufacturers should carry out, whenever possible, the providing of equipment which will materially reduce cost of production. With progressive houses, when times are good, the practice is to throw out old tools and buy the latest models if the exchange promises a substantial return on the additional investment.

By the time the condition of general business shall have revived, five years at least will have passed since replacements on a large scale have been attempted. In fact, as already stated, the number of machines which have been sold to effect a greater economy has been very much smaller than would seem to be the case at first thought. The buying which will result from this long delay should be tremendous. The railroads must be large customers, both for additional equipment and for replacements. The average railroad repair shop is equipped almost wholly with machinery that was much too old five years ago, and the additional years have accentuated the antiquity of the methods which must be employed where such tools are used.

In this half decade the machine tool people have made very important advances in design. This factor naturally is not so important as for the period which

preceded 1907, for those years marked the extraordinary development of machinery made possible by the introduction of the high speed steels. Nevertheless, the more recent changes constitute an element which owners of shops cannot afford to overlook. In many details machines have been refined and new types and improvements in types have been added to the list.

In considering the stocks of machinery in the storehouses of the builders and in the warerooms of the dealers, some observers are prone to speak with doubt as to the ability of the market to absorb such a great surplus. On the contrary, a change in conditions, such as that of 1906, would take out of stock every machine in the country in a very short time, in spite of every effort that the manufacturers could make in rushing production in their shops. It is not generally understood, perhaps, that certain lines of machinery are even now being absorbed so rapidly that a small percentage of increase in demand would send deliveries well into the future.

Users of metal working machinery realize much better than formerly that the most expensive thing they can have in their works is an antiquated machine. If the expenditure of \$1000 be necessary to replace it, the advantage in production cost would pay the whole bill in comparatively few months. With some modern machines, usually of the high-priced class, the saving is so radically great that the initial cost becomes almost a negligible quantity. At present, progressive manufacturers are either studying such problems as these or have already completed their plans for equipment changes, which they will carry into effect as soon as they feel that they can release the money for the purpose. It is good advice to the man whose financial resources would warrant it to buy now. Not only would he be able to get immediate deliveries but he would avoid the higher price which will undoubtedly come with a larger demand. He would enjoy the important advantage of being ready in advance to meet the big market for his own goods. With the improved facilities he will produce more goods at less cost and probably of a better quality.

#### Scientific Management in Government Shops

**WASHINGTON, D. C., December 10, 1911.**—The report of the special committee appointed last August to investigate the subject of scientific management of government workshops will not be ready for submission to the House of Representatives until March 10. The resolution under which the committee was appointed provided that its report should be made not later than December 10, but on Friday last the chairman, Mr. Wilson, of Pennsylvania, requested an extension of 90 days. This request was granted.

Mr. Wilson will now endeavor to put through the House another resolution appropriating \$10,000, or as much of that sum as may be necessary, to pay the traveling and per diem expenses of witnesses in order that the remainder of the committee's work may be performed here. Owing to the lack of any appropriation whatever the committee's activities, during the recess of Congress, were limited to seven days in Boston and two in New York. In other words, so long as they could not call witnesses before them, at the witnesses' own expense, they were required to visit the places where the witnesses lived. This the chairman found no easy matter, inasmuch as one of his associates, Mr. Redfield, of New York, is a manufacturer and a many-sided business man who could not absent himself from home for the long periods of time necessary to cover the places it was desired to visit. When this plain statement of the facts has been laid before the Committee on Accounts, to which the resolution asking for an ap-

propriation has been referred, Mr. Wilson has no doubt that the resolution will be favorably reported back to the House and that the House will pass it without material delay.

Within the next 10 days the committee will doubtless resume its sessions—this time in Washington—in the committee room of the House Committee on Labor of which Mr. Wilson is chairman. Many witnesses will be called. Some of them will be experts in shop management and others will be workmen employed by the government and private manufacturing concerns. Mr. Wilson hopes to have before the committee Mr. Taylor, whose system has been so generally discussed, and who has not yet testified, and a number of workmen from Philadelphia, Stamford, Bethlehem and Rock Island, the latter being the employees of the arsenal. Employees of the Midvale Steel Works, where the Taylor system was developed, will also be present. General Crozier and other War Department officials will be given an opportunity to be heard as well as the originators of other systems which follow the lines of the Taylor system.

Mr. Wilson says the workmen do not oppose the systematizing of the work or eliminating the elements of waste energy, but that they do oppose those elements which result in greater productivity as a result of greater expenditure of energy. The battle to be fought out before the committee, therefore, will doubtless be an interesting one. Upon the conclusion of its labors here, the committee will visit several establishments where the Taylor and other systems of like character are in effect in order to study their workings at close range.

J. G.

#### Molding Machine Patent Decision

A decision recently given by the United States Circuit Court of Appeals for the Third Circuit finally disposes of litigation which has been going on for several years involving patents on molding machine improvements. In the original suit which was brought in the Circuit Court of the United States for the eastern district of Pennsylvania, the Tabor Mfg. Company alleged that the defendants, the E. H. Mumford Company et al., in the vibrator molding machines which they had brought out infringed patents No. 533,401, No. 582,325 and No. 654,292, owned by the Tabor Mfg. Company. The decree of the Circuit Court dismissed the complaint, holding that there had been no infringement. This decree the Circuit Court of Appeals in a decision given at the October term has now affirmed.

In patent No. 533,401 only claim 1 was involved. The court pointed out that this claim was amended by the inventor, after the original filing, by restricting the movability of the pattern plate to lateral movability. Without this restriction, the claim would have been stricken out, the court says, as one anticipated by Teeter in patents Nos. 397,316 and 494,570. In the case of the defendants' machine the pattern plate "is rigidly and firmly bolted down to upright posts that are integral with the heavier castings." The result is, the decision says, "that while the pattern plate of the defendants may be jarred, as the pattern plates of the prior art could have been and were, it is not, in the sense of the claim in suit 'movable laterally in a horizontal plane.'"

In patent No. 582,325 the suit involved claims 8 to 11, all having as an element in each of the combinations therein set forth a pattern plate "having mortises or apertures between the patterns and away from the margins of the patterns." The limiting phrase beginning with the word "between" was inserted by amendment, the court says, "to distinguish it from the French patent No. 157,852 of 1883 to Montagne, on which it had been rejected." The apertures in the defendants' machine, it was pointed out, adjoin the patterns. Since the complainant's claims mean that the apertures are so located that all their edges are away from the edges of the patterns, it was held that the defendants' machine was no infringement.

Claim 1 of patent No. 582,325 was also in suit. One element in its combination is guard-strips at the sides of the fingers which support the flask-supporting frame, whose function it is to prevent the entry of sand between the frame and the upper ends of the fingers. The decision says: "It is questionable whether the combination of this

claim is a patentable one. In any event, upon the strict construction which must be given it, the defendants do not infringe."

Claims 9, 10 and 11 of Patent No. 654,292 set forth combinations in each of which is "means for maintaining said carrier and pattern in parallelism with themselves." On this the decision says: "The defendants have no such means. Their machine is equipped with the pegs or dowel pins of the old art instead of the V-shaped guide bars which constitute the complainant's means for maintaining the parallelism referred to, and these pegs or pins do not prevent tilting of the plate as it is withdrawn. Consequently there is no infringement here."

### The Rebate Plan in the British Steel Trade

Iron and steel dealers in Great Britain, particularly those carrying warehouse stocks, have been much exercised over the plan recently adopted by manufacturers of plates and structural shapes in England and Scotland, by which a rebate of five shillings a ton is given to all consumers who buy only the plates and shapes of the associated manufacturers. The object of the arrangement, as has been heretofore explained, is to secure the home market to home manufacturers and particularly to cut down the imports of German and Belgian steel. Some of the leading steel merchants of London, Glasgow, Manchester, Leeds, Hull, Bristol, Liverpool and Birmingham attended a conference at Birmingham November 30 to discuss the question. The opposition to the rebate arrangement has been partly due to the fear that when the associated manufacturers have tied up consuming interests they will make advances in prices more than recouping the 5s. rebate. Those in the trade who want the plan to fail look to see foreign manufacturers offer plates and shapes so much below the prices of home manufacturers as to tempt buyers to break their agreement even to the forfeiture of the rebate. There has been some talk of taking the matter into the courts on the ground that the rebate plan is illegal, as being in restraint of trade. It is pointed out, however, that to invoke the law would mean a long delay with no certainty of upsetting the manufacturers' arrangement.

### The Tennessee Company and Convict Coal Miners

Announcement is made by the Tennessee Coal, Iron & Railroad Company, Birmingham, Ala., that after January 1 it will cease to work State convicts in its Alabama coal mines. It will transfer all such convicts to the Banner coal mines, where the State will work them and sell the coal to the mine owners, the Pratt Consolidated. Some county convicts will necessarily be retained longer in certain of the Tennessee Company's coal mines, as under existing contracts they cannot be turned over until their terms expire at various dates later. But the company has decided to eliminate the convicts as rapidly as possible. The Tennessee Company prior to this last action had adopted the semi-monthly payday and begun the work of eliminating the sub-contract system from its mines. Its policy is to build good homes for its workingmen, to establish night schools, give prizes for the best gardens, establish recreation grounds, baths and reading rooms, and maintain wages. These policies have done much to reconcile union labor to the open shop system. In fact, the Tennessee Company's workmen are stated by local observers to be better off now than they have ever been.

**South Chicago Rail Mill Not Closed.**—President E. J. Buffington of the Illinois Steel Company has given out the following statement at Chicago: "The report in circulation of the closing down of our rail mill at South Chicago for lack of orders is entirely erroneous. The Illinois Steel Company has to-day 250,000 tons in steel orders more than a year ago, and will continue the plant in operation as long as orders are forthcoming. The Gary plant would have closed down a few weeks ago were it not that sufficient orders were received to keep it in full operation. The mill at South Chicago, because of necessity for repairs, will close for a week or two some time during the winter; but it is impossible to say when that time will be, owing to many orders which come unexpectedly on the prevailing low prices in the steel market."

### Large Riter-Conley Contracts

The Riter-Conley Mfg. Company, Pittsburgh, fabricator of structural steel and builder of blast furnaces, tanks, etc., has recently booked contracts for work running between \$2,500,000 and \$3,000,000. Its plant at Leetsdale, Pa., has started work on riveted steel pipe up to 10 ft. in diameter for the Los Angeles aqueduct, which aggregates close to 10,000 tons, while another order calls for galvanized steel transmission towers for the Southern California Edison Company, which will carry current from the power houses in the mountains to Los Angeles. For the Mond Nickel Company, northern Ontario, Canada, it will furnish 2000 tons of steel for new buildings, on which erection will commence in the spring. It is also building a duplicate of the present plant of the Saginaw Plate Glass Company, Saginaw, Mich., and within a week will start work on the new plant of the Penn Motor Company, New Castle, Pa.

The company has done considerable work in Brazil over the last year and has erecting crews there now. Another contract recently received from Brazil is for a large power house at Rio das Lages. For use on the Amazon River, Brazil, it will fabricate the steel for six steamboats. Work will soon be started on galvanized steel transmission towers for an American interest, 150 to be special and 900 standard, with an aggregate weight of about 4000 tons. For large interests in Mexico it will furnish 24 oil storage tanks, aggregating 3500 tons of material, each to have a capacity of 55,000 barrels. It is furnishing the structural material, 1000 tons, for the new soil pipe foundry to be built at Tuscaloosa, Ala., and will shortly start erecting a viaduct, about 500 tons, for the Tuscaloosa Mineral Railroad Company. Ground was recently broken for a new gas holder of 6,000,000 cu. ft. capacity for the Allegheny Heating Company, North Side, Pittsburgh. The Riter-Conley Company erected there several years ago the first gas holder of 5,000,000 cu. ft. capacity. A 6,00,000-cu. ft. gas holder for Detroit is also under construction. The contract for fabricating the steel work for the additions to the First National Bank, Pittsburgh, aggregating about 2600 tons, the first of which was delivered November 3, is expected to be completed before the holidays. Contracts for new work and recently started jobs will insure steady operations of the company over the next six months.

### The Steel Corporation's Unfilled Orders

The bulletin of the United States Steel Corporation's unfilled orders for mill products given out December 9, showed a total of 4,141,955 tons, a gain in the month of 447,627 tons. The increase in October was 83,011 tons, while September showed a decrease of 84,668 tons. The large increase in November indicates freer sales ahead at the low prices prevailing in that month. The low point in the unfilled tonnage records of the corporation was 2,674,757 tons, shown in the report for December 31, 1910. The amounts reported for the various months of this year are as follows:

Nov. 30, 1911.....	4,141,955	May 31, 1911.....	3,113,187
Oct. 31, 1911.....	3,694,328	April 30, 1911.....	3,218,704
Sept. 30, 1911.....	3,611,317	Mar. 31, 1911.....	3,447,301
Aug. 31, 1911.....	3,695,985	Feb. 28, 1911.....	3,400,543
July 31, 1911.....	3,584,085	Jan. 31, 1911.....	3,110,919
June 30, 1911.....	3,361,058		

The totals at the close of the various years have been as follows: 1902, 5,347,523 tons; 1903, 3,215,123 tons; 1904, 4,696,203 tons; 1905, 7,605,086 tons; 1906, 8,498,719 tons (the high record); 1907, 4,624,552 tons; 1908, 3,603,527 tons; 1909, \$5927,031 tons; 1910, 2,674,757 tons.

**The Use of Intoxicants by Steel Workers.**—Dr. Thomas Darlington, secretary of the Welfare Committee of the American Iron and Steel Institute, 30 Church street, New York, is sending an inquiry to the membership on the subject of regulating or diminishing the use of alcohol by employees in iron and steel works. Manufacturers who have put in force any method which directly or indirectly bears upon the regulation of the use of intoxicants by employees are asked to send details to the Welfare Committee.

A plan is being considered by the Army and Navy Board to consolidate the New York, Boston and Portsmouth navy yards into one large yard at Narragansett Bay.

# The Iron and Metal Markets

## A Comparison of Prices

### Advances Over the Previous Week in Heavy Type, Declines in Italics.

At date, one week, one month and one year previous.

**PIG IRON**, Per Gross Ton: Dec. 13, Dec. 6, Nov. 8, Dec. 14, 1911. 1911. 1911. 1910.

Foundry No. 2 standard, Philadelphia	\$14.85	\$14.85	\$15.00	\$15.50
Foundry No. 2, Valley furnace	13.00	13.00	13.25	13.75
Foundry No. 2 Southern, Cincinnati	<b>13.25</b>	13.00	13.25	14.25
Foundry No. 2, Birmingham, Ala.	<b>10.00</b>	9.75	10.00	11.00
Foundry No. 2, at furnace, Chicago*	14.00	14.00	14.10	16.00
Basic, delivered, eastern Pa.	<b>14.25</b>	14.50	14.50	14.75
Basic, Valley furnace	12.25	12.25	12.50	13.50
Bessemer, Pittsburgh	14.90	14.90	15.15	15.90
Gray forge, Pittsburgh	13.40	13.40	13.40	13.90
Lake Superior charcoal, Chicago	16.50	16.50	16.50	18.00

### COKE, CONNELSVILLE,

Per Net Ton, at Oven:				
Furnace coke, prompt shipment	<b>1.55</b>	1.50	1.50	1.45
Furnace coke, future delivery	<b>1.65</b>	1.60	1.55	1.75
Foundry coke, prompt shipment	1.90	1.90	1.80	2.00
Foundry coke, future delivery	<b>2.15</b>	2.10	2.00	2.10

### BILLETS, &c., Per Gross Ton:

Bessemer billets, Pittsburgh	19.00	19.00	20.00	23.00
Open-hearth billets, Pittsburgh	19.00	19.00	19.00	23.00
Forging billets, Pittsburgh	24.00	24.00	24.00	28.00
Open hearth billets, Philadelphia	21.40	21.40	22.40	25.50
Wire rods, Pittsburgh	24.50	25.00	25.50	28.00

### OLD MATERIAL, Per Gross Ton:

Iron rails, Chicago	14.50	14.50	14.50	15.50
Iron rails, Philadelphia	15.50	15.50	15.50	17.00
Car wheels, Chicago	<b>13.00</b>	12.75	12.00	13.50
Car wheels, Philadelphia	<b>12.50</b>	12.00	11.25	13.25
Heavy steel scrap, Pittsburgh	12.25	12.25	12.00	13.75
Heavy steel scrap, Chicago	<b>10.00</b>	9.75	9.50	12.00
Heavy steel scrap, Philadelphia	12.00	12.00	11.50	12.50

### FINISHED IRON AND STEEL,

Per Pound to Largest Buyers:	Cents.	Cents.	Cents.	Cents.
Bessemer rails, heavy, at mill..	1.25	1.25	1.25	1.25
Iron bars, Philadelphia	<b>1.25</b>	1.22½	1.20	1.35
Iron bars, Pittsburgh	<b>1.25</b>	1.20	1.20	1.40
Iron bars, Chicago	1.15	1.15	1.15	1.35
Steel bars, Pittsburgh	1.10	1.10	1.10	1.40
Steel bars, tidewater, New York	1.26	1.26	1.26	1.56
Tank plates, Pittsburgh	1.15	1.15	1.15	1.40
Tank plates, tidewater, New York	1.31	1.31	1.31	1.56
Beams, Pittsburgh	1.15	1.15	1.15	1.40
Beams, tidewater, New York	1.31	1.31	1.31	1.56
Angles, Pittsburgh	1.15	1.15	1.15	1.40
Angles, tidewater, New York	1.31	1.31	1.31	1.56
Skelp, grooved steel, Pittsburgh	1.12½	1.12½	1.15	1.25
Skelp, sheared steel, Pittsburgh	1.20	1.20	1.25	1.30

### SHEETS, NAILS AND WIRE:

Per Pound to Largest Buyers:	Cents.	Cents.	Cents.	Cents.
Sheets, black, No. 28, Pittsburgh	<b>1.90</b>	1.85	1.85	2.20
Wire nails, Pittsburgh	<b>1.55</b>	1.50	1.55	1.70
Cut nails, Pittsburgh	<b>1.50</b>	1.45	1.50	1.60
Barb wire, galv., Pittsburgh	<b>1.90</b>	1.85	1.85	2.00

### METALS,

Per Pound:	Cents.	Cents.	Cents.	Cents.
Lake copper, New York	<b>13.75</b>	13.37½	12.75	13.00
Electrolytic copper, New York	<b>13.62½</b>	13.12½	12.62½	12.75
Speeler, St. Louis	6.25	6.55	6.45	5.75
Speeler, New York	6.40	6.70	6.60	5.85
Lead, St. Louis	4.37½	4.37½	4.15	4.35
Lead, New York	4.45	4.45	4.25	4.50
Tin, New York	44.35	45.50	43.15	38.55
Antimony, Hallett, New York	7.60	7.65	7.65	7.75
Tin plate, 100-lb. box, New York	\$3.64	\$3.64	\$3.64	\$3.84

\*The average switching charge for delivery to foundries in the Chicago district is 50c. per ton.

## Prices of Finished Iron and Steel f.o.b. Pittsburgh

Freight rates from Pittsburgh in carloads, per 100 lb.: New York, 16c.; Philadelphia, 15c.; Boston, 18c.; Buffalo, 11c.; Cleveland, 10c.; Cincinnati, 15c.; Indianapolis, 17c.; Chicago, 18c.; St. Paul, 32c.; St. Louis, 22½c.; New Orleans, 30c.; Birmingham, Ala., 45c.; Pacific coast, 80c. on plates, structural shapes and sheets No. 11 and heavier; 85c. on sheets Nos. 12 to 16; 95c. on sheets No. 16 and lighter; 65c. on wrought pipe and boiler tubes.

Plates.—Tank plates, ¼ in. thick, 6½ in. up to 100 in. wide, 1.15c., base, net cash, 30 days. Following are stipulations prescribed by manufacturers, with extras:

Rectangular plates, tank steel or conforming to manufacturers' standard specifications for structural steel dated February 6, 1903,

or equivalent, ¾ in. thick and over on thinnest edge, 100 in. wide and under, down to but not including 6 in. wide, are base.

Plates up to 72 in. wide, inclusive, ordered 10.2 lb. per square foot, are considered ¼-in. plates. Plates over 72 in. wide must be ordered ¼ in. thick on edge, or not less than 11 lb. per square foot, to take base price. Plates over 72 in. wide ordered less than 11 lb. per square foot down to the weight of 3-16-in. take the price of 3-16-in.

Allowable overweight, whether plates are ordered to gauge or weight, to be governed by the standard specifications of the Association of American Steel Manufacturers.

Extras.	Cents per lb.
Gauges under ¼ in. to and including 3-16 in. on thin- nest edge	.10
Gauges under 3-16 in. to and including No. 8	.15
Gauges under No. 8 to and including No. 9	.25
Gauges under No. 9 to and including No. 10	.30
Gauges under No. 10 to and including No. 12	.40
Sketches (including all straight taper plates) 3 ft. and over in length	.10
Complete circles, 3 ft. in diameter and over	.20
Boiler and flange steel	.10
"A. B. M. A." and ordinary firebox steel	.20
Still bottom steel	.30
Marine steel	.40
Locomotive firebox steel	.50
Widths over 100 in. up to 110 in., inclusive	.05
Widths over 110 in. up to 115 in., inclusive	.10
Widths over 115 in. up to 120 in., inclusive	.15
Widths over 120 in. up to 125 in., inclusive	.25
Widths over 125 in. up to 130 in., inclusive	.50
Widths over 130 in.	.00
Cutting to lengths or diameters under 3 ft. to 2 ft., in- clusive	.25
Cutting to lengths or diameters under 2 ft. to 1 ft., in- clusive	.50
Cutting to lengths or diameters under 1 ft.	.15
No charge for cutting rectangular plates to lengths 3 ft. and over.	

**STRUCTURAL MATERIAL.**—I-beams, 3 to 15 in.; channels, 3 to 15 in., and angles, 3 to 6 in. on one or both legs, ¼ in. and over, 1.15c. Other shapes and sizes are quoted as follows:

Structural Material	Cents per lb.
I-beams over 15 in.	1.20 to 1.25
H-beams over 18 in.	1.30 to 1.35
Angles over 6 in.	1.20 to 1.25
Angles, 3 in. on one or both legs, less than ¼ in. thick, plus full extras, as per steel bar card Sept. 1, 1909.	1.20 to 1.25
Tees, 3 in. and up	1.20 to 1.25
Zees, 3 in. and up	1.15 to 1.20
Angles, channels and tees, under 3 in., plus full extras as per steel bar card Sept. 1, 1909.	1.20 to 1.25
Deck beams and bulb angles	1.45 to 1.50
Hand rail tees	2.00 to 2.15
Checkered and corrugated plates	2.00 to 2.15

**Sheets.**—Makers' prices for mill shipments on sheets of U. S. Standard gauge, in carload and larger lots, on which jobbers charge the usual advances for small lots from store, are as follows:

Blue Annealed Sheets.	Cents per lb.
Nos. 3 to 8	1.30 to 1.35
Nos. 9 and 10	1.40 to 1.45
Nos. 11 and 12	1.45 to 1.50
Nos. 13 and 14	1.50 to 1.55
Nos. 15 and 16	1.60 to 1.65

Box Annealed Sheets, Cold Rolled.	One Pass.	Three Pass.
Nos. 10 to 12	1.55 to 1.60	
Nos. 13 and 14	1.60 to 1.65	
Nos. 15 and 16	1.65 to 1.70	1.75 to 1.80
Nos. 17 to 21	1.70 to 1.75	1.80 to 1.85
Nos. 22, 23 and 24	1.75 to 1.80	1.85 to 1.90
Nos. 25 and 26	1.80 to 1.85	1.90 to 1.95
No. 27	1.85 to 1.90	1.95 to 2.00
No. 28	1.90 to 1.95	2.00 to 2.05
No. 29	1.95 to 2.00	2.05 to 2.10
No. 30	2.05 to 2.10	2.15 to 2.20

Galvanized Sheets of Black Sheet Gauge.	
Nos. 10 and 11	.90 to 1.95
Nos. 12, 13 and 14	2.00 to 2.05
Nos. 15, 16 and 17	2.15 to 2.20
Nos. 18 to 22	2.30 to 2.35
Nos. 23 and 24	2.40 to 2.45
Nos. 25 and 26	2.60 to 2.65
No. 27	2.75 to 2.80
No. 28	2.90 to 2.95
No. 29	3.00 to 3.05
No. 30	3.20 to 3.25

All above rates on sheets are f.o.b. Pittsburgh, terms 30 days net, or 2 per cent. cash discount in 10 days from date of invoice, as also are the following base prices per square for painted and galvanized roofing sheets, with 2½-in. corrugations.

Corrugated Roofing Sheets, Per Square.					
Gauge.	Painted.	Galvanized.	Gauge.		
29	...	\$2.30	23	\$2.35	\$3.45
28	\$1.30	2.45	22	2.55	3.65
27	1.45	2.50	21	2.75	4.00
26	1.55	2.60	20	3.00	4.30
25	1.80	3.00	18	4.00	5.65
24	2.05	3.10	16	4.85	6.45

**Wire Rods and Wire.**—Bessemer, open-hearth and chain rods, \$24.50. Fence wire, Nos. 0 to 9, per 100 lb., terms 60 days, or 2 per cent. discount in 10 days, carload lots, to jobbers, annealed, \$1.35; galvanized, \$1.65. Carload lots, to retailers, annealed, \$1.45; galvanized, \$1.75. Galvanized barb wire to jobbers, \$1.85; painted, \$1.55. Wire nails, to jobbers, \$1.55.

The following table gives the price to retail merchants on wire in less than carloads, including the extras on Nos. 10 to 16, which are added to the base price:

Fence Wire, Per 100 Lb.							
Nos.	0 to 9	10	11	12 & 12½	13	14	15
Annealed . . . . .	\$1.50	\$1.55	\$1.60	\$1.65	\$1.75	\$1.85	\$1.95
Galvanized . . . . .	1.80	1.85	1.90	1.95	2.05	2.15	2.55

**Wrought Pipe.**—The following are the jobbers' carload discounts on the Pittsburgh basing card on wrought pipe, in effect from December 1, 1911:

	Butt Weld.		Iron		
	Steel	Black.	Galv.	Black.	Galv.
5/8 and 3/4 in. . . . .		74	54	68	48
3/8 in. . . . .		75	65	69	59
1/2 in. . . . .		78	68	72	62
3/4 to 1 1/2 in. . . . .		81	73	75	67
2 to 3 in. . . . .		82	75	76	69
Lap Weld.					
1 1/4 and 1 1/2 in. . . . .		79	72	72	65
2 in. . . . .		81	74	74	67
2 1/2 to 4 in. . . . .		80	72	73	65
4 1/2 to 6 in. . . . .		78	68	71	61
7 to 12 in. . . . .		55	47	47	47
Butt Weld, extra strong, plain ends, card weight.					
3/8, 1/2, 3/4 in. . . . .		70	60	65	55
1/2 in. . . . .		75	69	70	64
3/4 to 1 1/2 in. . . . .		79	73	74	68
2 to 3 in. . . . .		80	74	75	69
Lap Weld, extra strong, plain ends, card weight.					
1 1/2 in. . . . .		76	66	66	60
2 in. . . . .		78	72	73	67
2 1/2 to 4 in. . . . .		77	71	72	66
4 1/2 to 6 in. . . . .		70	60	65	55
7 to 8 in. . . . .		65	55	60	50
Butt Weld, double extra strong, plain ends, card weight.					
1/2 in. . . . .		65	59	60	54
3/4 to 1 1/2 in. . . . .		68	62	63	57
2 to 3 in. . . . .		70	64	65	59
Lap Weld, double extra strong, plain ends, card weight.					
2 in. . . . .		66	60	61	55
2 1/2 to 4 in. . . . .		68	62	63	57
4 1/2 to 6 in. . . . .		67	61	62	56
7 to 8 in. . . . .		60	55	55	45
Plugged and Reamed.					
1 to 1 1/2, 2 to 3 in. Butt Weld	Will be sold at two (2) points lower basing (higher price) than merchants' or card weight pipe. Butt or lap weld as specified.	65	59	60	54
2, 2 1/2 to 4 in. . . . .		72	68	63	57

The above discounts are for "card weight," subject to the usual variation of 5 per cent. Prices for less than carloads are three (3) points lower basing (higher price) than the above discounts.

**Boiler Tubes.**—Discounts on lap welded steel and charcoal iron boiler tubes to jobbers in carloads are as follows:

Steel.	Charcoal Iron.
1 1/4 to 2 1/4 in. . . . .	65
2 1/2 in. . . . .	67 1/2
2 3/4 to 3 1/4 in. . . . .	72 1/2
3 1/2 to 4 in. . . . .	75
5 to 6 in. . . . .	67 1/2
7 to 13 in. . . . .	65

2 1/2 in. and smaller, over 18 ft., 10 per cent. net extra.

2 1/2 in. and larger, over 22 ft., 10 per cent. net extra.

Less than carloads will be sold at the delivered discounts for carloads, lowered by two points for lengths 22 ft. and under to destinations east of the Mississippi River; lengths over 22 ft. and all shipments going west of the Mississippi River must be sold f.o.b. mill at Pittsburgh basing discounts, lowered by two points.

## Pittsburgh

PITTSBURGH, PA., December 13, 1911.—(By Telephone)

**Pig Iron.**—The total purchases of basic iron by the Jones & Laughlin Steel Company amount to not over 30,000 tons, most of the business being taken by two interests, and the prices paid were \$12.10 to \$12.15 at furnace, the freight rate running from 40c. to 80c. per ton. The iron is for prompt shipment, and it will probably all go to Aliquippa. Some fairly large sales of forge iron have been made, one consumer buying 1500 tons for first half at \$12.50 Valley furnace, another 3000 tons and also one lot of 2500 tons for first quarter at the same price. A sale of 2000 tons of No. 2 foundry iron, first quarter, was made at about \$13 Valley furnace. Prices of basic iron are reported firmer, some sellers asking as high as \$12.50 at furnace. A sale of 2000 tons of Bessemer iron for first half is reported at \$14.25, Valley furnace. Inquiries for pig iron are better, and more is being sold than for some time. We quote: Bessemer, \$14 to \$14.25; malleable Bessemer, \$12.50 to \$12.75; basic, \$12.25; No. 2 foundry, \$13 to \$13.10, and

gray forge, \$12.50, all at Valley furnace, the freight rate to the Pittsburgh district being 90c. a ton.

**Billets and Sheet Bars.**—Steel mills report that specifications against contracts for billets and sheet and tin bars have been quite heavy so far this month, and shipments in December to consumers will show a large increase over November. Prices are firmer, higher figures being asked on Bessemer sheet and tin bars. We quote: Open-hearth and Bessemer billets, \$19 to \$19.50; open-hearth sheet bars, \$20 to \$20.50; Bessemer sheet bars, \$20.50 to \$21; forging billets, \$24, Pittsburgh or Youngstown.

**Ferromanganese.**—New inquiries are in the market, one for 100 tons, another for 250 tons and a third for 300 tons. A sale of 25 tons of 50 per cent. ferrosilicon has been made at \$70, Pittsburgh.

(By Mail.)

The feeling is growing stronger that the turn has been made. Conditions are better than for a long time, with the outlook for the future much more encouraging. Leading events of the week have been the purchase of at least 30,000 tons of basic pig iron by the Jones & Laughlin Steel Company; an advance of \$1 a ton on wire products and an advance of \$2 a ton on black and galvanized sheets from the minimum prices of 1.80c. for No. 28 black and 2.80c. for No. 28 galvanized. Sales managers of the leading steel companies report that specifications have been much heavier in the past week and that a very large volume of business is being offered by jobbers and consumers for delivery over next year, but which in most cases is being turned down. The market seems to have reversed itself in the fact that there is more anxiety among jobbers and consumers to cover ahead than on the part of the mills to sell. Several leading steel companies state that they are trying to take on as little tonnage as possible at present prices, absolutely refusing to book contracts for long delivery. There is no doubt that the average of prices on finished iron and steel to-day is higher than two or three weeks ago. There is also a firmer tone in prices on pig iron, steel billets and sheet bars and on coke and scrap.

**Ferromanganese.**—Importers of standard English ferromanganese are still quoting \$38.50, Baltimore, but only small sales have been made at this price. About 100 tons of standard English 50 per cent. is reported sold at \$38 to \$38.50, Baltimore. The freight rate for delivery in the Pittsburgh district is \$1.95 a ton.

**Ferrosilicon.**—The inquiry of the Carnegie Steel Company for 6000 tons of 50 per cent. for delivery over all of 1912 has not yet been closed. Sales of two cars, or about 50 tons, of 50 per cent. are reported at \$70, Pittsburgh, and it is claimed that the price will go still higher. We quote 10 per cent. at \$21; 11 per cent., \$22, and 12 per cent., \$23, f.o.b. cars at furnace, Ashland, Ky., or Jackson, Ohio.

**Muck Bar.**—Prices are said to be slightly firmer and one maker reports sales of about 500 tons at about \$28, Pittsburgh, for bar made from all pig iron. We quote best grades of muck bar, made from all pig iron, at \$27.50 to \$28, Pittsburgh.

**Skelp.**—A mill outside the Pittsburgh district has sold 1000 tons of narrow grooved steel skelp at about 1.12 1/2c., delivered buyer's mill, Pittsburgh. One leading maker of skelp reports that it is filled up for 60 days and cannot promise deliveries before February or later. We quote grooved steel skelp at 1.12 1/2c. to 1.15c.; sheared steel skelp, 1.17 1/2c. to 1.20c.; grooved iron skelp, 1.40c. to 1.45c., and sheared iron skelp, 1.60c. to 1.65c., all for delivery at consumers' mills in the Pittsburgh district.

**Wire Rods.**—As yet the advance of \$1 a ton on wire products is not reflected in wire rods, which continue very dull, with prices rather weak. Most consumers are covered by contracts and specifications are only fair. We quote \$24.50 to \$25 for Bessemer, open hearth and chain rods, f.o.b. Pittsburgh.

**Steel Rails and Steel Car Wheels.**—In the past week the Carnegie Steel Company has received three or four fairly large contracts for light rails. The coal mining interests are placing orders quite freely for light rails and specifications against contracts are good. It is understood that several large contracts for standard sections have been placed by Eastern roads, details of which will be given out in a few days. The rolling schedule of the Edgar Thomson rail mills is better now than it has been at any time this year. New orders for splice bars and car wheels are heavier. The Carnegie Steel Company has sold 2500 steel car wheels to the Berwind-White Coal Mining Company, 4000 to the

Norfolk & Western Railroad and 4000 to the Transit Development Company, Brooklyn, N. Y., while the Pennsylvania Railroad is reported to be in the market for upward of 20,000. We quote standard sections at 1.25c. per lb.; 8 and 10-lb. light rails, 1.25c.; 12 and 14-lb., 1.16c.; 16, 20 and 25-lb., 1.12c.; 30 and 35-lb., 1.10c., and 40 and 45-lb., 1.08c., f.o.b. at mill.

**Structural Material.**—There are more evidences of stiffening in prices on plain material. Local structural fabricators have been advised by leading mills not to bid on jobs in the future based on plain material at less than 1.15c. at mill. Some large jobs are being figured on with good prospects of being placed in a short time. The McClinic-Marshall Construction Company is the lowest bidder on the New York Central Terminal in New York City, requiring about 3500 tons of steel. The Riter-Conley Mfg. Company has taken 2000 tons of steel for new buildings for the Mond Nickel Company of northern Ontario, 1000 tons for a foundry for Tuscaloosa, Ala., and 500 tons for a viaduct for the Tuscaloosa Mineral Railroad. The American Bridge Company has taken about 3000 tons of bridge work for a Western road and 2200 tons for a Southern road. We quote beams and channels up to 15 in. at 1.15c., Pittsburgh.

**Plates.**—The Pennsylvania Railroad has inquiries out for 1000 to 2000 composite gondola cars, with 70-ton trucks, rated at 140,000 lb. capacity, also 1000 to 2000 type H-21 all-steel coke cars, with 70-ton trucks, and 1000 to 2000 type H-22 coke cars, with 70-ton trucks and equipped with side doors. The exact plans for these cars have not as yet been furnished by the railroad company, and so far no bids have gone in on them. It is said that 70-ton truck cars have already been built by several of the steel car companies, a Southern railroad having had some of this type in service for several years. Reports are that the Pennsylvania Railroad may buy upward of 20,000 such cars if the right prices are made. Orders for steel cars in the past two weeks have been light, but the Baltimore & Ohio is reported to be figuring on the purchase of a large number. Bids have been asked by the United States Government on the building of two battleships, each requiring 13,800 tons of plates and shapes, exclusive of the armor plate, and proposals are to be filed January 4. Mill operations are heavier, the Homestead plate mills of the Carnegie Steel Company running practically full for the first time in nearly a year. Makers are much stronger in their ideas on prices, and some low quotations have been withdrawn. We quote wide sheared plates at 1.15c., at mill, but on narrow sizes several of the smaller mills are still quoting 1.10c.

**Sheets.**—Effective December 11 several of the leading sheet mills advanced their prices to the basis of 1.90c. for No. 28 black and 2.90c. for No. 28 galvanized, following this with the statement that these prices are absolutely minimum and nothing less will be accepted. Putting former minimum prices at 1.80c. and 2.80c., respectively, this means an advance of \$2 a ton. The generally better feeling in nearly all lines of finished iron and steel is strongly shown in sheets, new demand and specifications being heavier in the past two or three weeks than at any time since early in the year. Jobbers and consumers have been trying to tie the mills up with contracts at recent low prices covering their entire requirements through the first half of 1912, and in some cases through all of next year, but these offers have been turned down. We quote No. 28 black sheets at 1.90c. and No. 28 galvanized at 2.90c., at mill, for delivery over the first quarter and first half of 1912. Jobbers charge the usual advances over these prices on small lots from store.

**Tin Plate.**—New business is coming in at a very good rate. The mills are increasing their rate of operations. Within a week or two the American Sheet & Tin Plate Company expects to have all of its 30 hot mills in its Shenango Works and the 22 mills in its New Castle Works in full operation. It will also start on December 18 the remaining five hot mills in its Sharon Works, when, and for the first time in some months, this plant will be in full operation. Its National Works, containing 25 hot mills, will be in full operation December 18. Last week the McKeesport Tin Plate Company started up 12 more hot mills at its plant in McKeesport, Pa., and its 22 mills are now in operation and will run full during December at least. The Jones & Laughlin Steel Company expects to start its second unit of 12 hot mills at Aliquippa, Pa., early in January. The leading mills have a very large amount of new business on their books. The open market on small lots of tin plate remains at \$3.40 per base box for 14 x 20 coke plates.

**Bars.**—A heavy volume of new business and specifications against contracts for steel bars has been received by the mills in the past two or three weeks, and one leading mill reports that it is now 60 days behind in deliveries. The tone of the steel bar market is firmer. The minimum price on steel bars for delivery up to January 1 is now 1.10c. One or two mills will sell for first quarter at this price, but others ask 1.15c. The market on iron bars is also looking up, the new demand being heavier and prices are firmer. We quote common iron bars at 1.25c. to 1.30c., maker's mill, Pittsburgh.

**Hoops and Bands.**—Buyers realize that the bottom of the market has probably been reached, and are now trying to cover ahead for the next six months or more, but, as a rule, makers will not sell so far ahead at present prices. New demand is heavier, and specifications are coming in better than for some time. We quote steel bands at 1.10c. for prompt shipment and 1.15c. for first quarter delivery. We quote steel hoops at 1.30c., maker's mill, Pittsburgh.

**Merchant Steel.**—Jobbers and consumers are buying more freely. Both new demand and specifications are heavier than for some time. We quote: Iron finished tire, 1½ x ¾-in. and larger, 1.15c., base; planished tire, ½-in. and larger, 1.35c.; channel tire, ¼, ½ and 1-in., 1.50c.; toe calk, 1.70c., base; flat sleigh shoe, 1.25c.; concave or convex, 1.50c.; cutter shoe tapered or bent, 2.15c.; spring steel, 1.75c.; machinery steel, smooth finish, 1.50c., all f.o.b. at mill.

**Railroad Spikes.**—The railroads are now trying to specify as far ahead as they can for spikes, but makers are not willing to accept contracts for delivery over all of next year at present prices. The New York Central, Erie, Baltimore & Ohio and Boston & Albany railroads have recently sent in specifications for railroad spikes for delivery over the next three months. We quote railroad spikes at \$1.40 base in standard sizes in carload and larger lots, f.o.b. Pittsburgh.

**Rivets.**—Makers report that new demand and specifications against contracts are running heavier than at any time for some months. The tone of the market is said to be slightly stronger. We quote structural rivets at 1.45c. to 1.50c. and boiler rivets at 1.55c. to 1.60c., f.o.b. Pittsburgh. On a very desirable order for large tonnage these prices might be shaded \$1 a ton.

**Shafting.**—Specifications and new orders are coming in more freely. One leading maker reports specifications for 1500 tons of shafting from a large implement maker. We quote cold-rolled shafting at 60 and 10 per cent. off in carload and larger lots and about 60 per cent. off in small lots delivered in base territory.

**Spelter.**—This metal has declined very fast and seems to be somewhat demoralized. Some of the makers of galvanized sheets and galvanized pipe in the Youngstown district have been considering the erection of a zinc smelter in the Mahoning Valley to be operated on a co-operative basis. Possibly this report has had something to do with the recent heavy decline in spelter. We now quote prime Western at 6.10c., East St. Louis, equal to 6.22½c., Pittsburgh.

**Wire Products.**—Effective December 11, leading makers of wire and wire nails announced an advance of \$1 a ton in prices. This is in sympathy with the stronger market on other lines of finished products. New demand and specifications for wire nails are reported as slightly better. We quote: Wire nails, \$1.55; cut nails, \$1.50; galvanized barb wire, \$1.85; painted, \$1.55; annealed fence wire, \$1.35; galvanized fence wire, \$1.65, f.o.b. Pittsburgh, usual terms, freight added to point of delivery.

**Merchant Pipe.**—It is expected that this week a contract will be placed for 125 to 150 miles of 12-in. line pipe for the Southern Gas Company of California. A local mill reports a sale of 15 miles of 6-in. steel pipe for prompt delivery. The mills expect that December will be a heavier month in volume of new orders than November. The new prices on black and galvanized steel pipe which went into effect December 1 are reported as being maintained.

**Tubes.**—The demand for locomotive tubes is fairly active. Two of the leading railroads are figuring on contracts to be placed after the first of the year. New demand and specifications for merchant tubes are only moderate and prices are more or less shaded.

**Iron and Steel Scrap.**—The scrap list of the Pennsylvania Lines West closed December 13 and reports are that the company secured very close to \$12.75, Pittsburgh, for its heavy steel scrap. While new purchases are not heavy the market is firmer, and small sales of heavy steel scrap of special quality are re-

ported as high as \$12.75, Pittsburgh. Dealers report that consumers are willing to pay present prices for good-sized tonnages for delivery over first quarter and first half of next year, but that it is difficult to buy in large lots at to-day's prices. The demand at present is mostly for heavy steel scrap, cast iron borings, and wrought iron turnings, but a fair tonnage of bundled sheet scrap is also moving. The embargo on scrap destined for the Pittsburgh Steel Company, Monessen, Pa., is still on. Sales are reported of 500 tons of cast iron borings at \$9, delivered in the Pittsburgh district, and 850 tons of wrought iron turnings at \$9.15, delivered. Dealers quote as follows, per gross ton, f.o.b. Pittsburgh, unless otherwise noted:

Heavy steel scrap, Steubenville, Follansbee, Sharon, Monessen and Pittsburgh delivery	\$12.25 to \$12.75
No. 1 foundry cast	11.75 to 12.00
No. 2 foundry cast	10.75 to 11.00
Bundled sheet scrap, f.o.b. consumers' mill, Pittsburgh district	10.25 to 10.50
Rerolling rails, Newark and Cambridge, Ohio, Cumberland, Md., and Franklin, Pa.	12.50 to 12.75
No. railroad malleable stock	11.25 to 11.50
Grate bars	9.00 to 9.25
Low phosphorus melting stock	15.25 to 15.50
Iron car axles	20.50 to 21.00
Steel car axles	16.00 to 16.25
Locomotive axles	22.00 to 22.50
No. 1 busheling scrap	11.00 to 11.25
No. 2 busheling scrap	7.00 to 7.25
Old car wheels	12.00 to 12.25
*Cast iron borings	8.75 to 9.00
*Machine shop turnings	9.00 to 9.25
Sheet bar crop ends	13.75 to 14.00
Old iron rails	14.50 to 14.75
No. 1 wrought scrap	12.00 to 12.25
Heavy steel axle turnings	9.75 to 10.00
Stove plate	9.00 to 9.25

\*These prices are f.o.b. cars at consumers' mills in the Pittsburgh district.

†Shipping point.

**Coke.**—A number of blast furnace operators have not yet covered for their supply of coke for delivery in first half and negotiations are on for a fairly large tonnage. Prices of standard makes of furnace coke for prompt shipment are higher, largely due to the scarcity of labor in the coke regions. Inquiries are also in the market for a round tonnage of foundry coke for delivery over the first half. The output of coke in the Upper and Lower Connellsburg regions last week was 315,931 net tons, a decrease over the previous week of about 15,000 tons. We quote best grades of furnace coke for prompt shipment at \$1.60 and for first half of 1912 at \$1.65 to \$1.70 per net ton at oven; best makes of 72-hr. foundry coke for spot shipment at \$1.90 to \$2 and, for first half of next year at \$2.10 to \$2.25 per net ton at oven to consumers. Some makes of furnace and foundry coke not running as high in quality, are obtainable at slightly lower prices.

## Chicago

CHICAGO, ILL., December 12, 1911.

The market pendulum continues to swing away from that position in which the buyers have enjoyed predominant advantage. The level of prices is slightly higher and consumers are showing a willingness to contract for three and six months ahead at these advances. Reports became public during the week of the purchase by Western railroads of an aggregate approximating 5000 additional cars, with inquiries for 1250 more. One of the principal makers of steel bars is standing firmly on the 1.15c. Pittsburgh basis, or 1.33c. Chicago, although this price is \$1 a ton above the most favorable quotation. Local plate mills are heavily booked up on plates and can hardly accept further business for prompt shipment. Structural business, while not so heavy, is in good volume. Architectural work contracted for during the week aggregated 8500 tons, of which the principal item was the Hub Building, Chicago, requiring about 6000 tons. An advance of \$1 a ton in wire prices is noted. The demand for pig iron continues active with moderately heavy selling. No immediate advance in open quotations is anticipated. The scrap situation is about on the same basis as a week ago, with dealers strongly supporting the market by speculative buying.

**Pig Iron.**—Activity in the buying of pig iron has continued unabated, and the balance of inquiry unfilled, gives promise of important tonnage to come. Aside from purchases of malleable by a large consumer, individual transactions were under 2000 tons rather than over. Typical sales include one of 2000 tons to a Chicago stove manufacturer, 1000 tons to a northern Indiana agricultural machinery builder, 500 tons to a Wis-

consin company, 500 tons to a malleable foundry near Chicago and 500 tons to a maker of heating furnaces. The price of \$9.50, Birmingham, for No. 2, made on some recent analysis and split delivery orders apparently has entirely disappeared, and even \$9.75 for immediate shipment is now exceptional. While the market for Southern iron again rests at \$10, at least two large interests who have sold freely are now asking \$10.50 for first half delivery. A Northern furnace which offers an iron in competition with Southern grades is understood to have placed a considerable tonnage in the aggregate. Northern furnaces have taken their share of the business, for which orders it was sometimes necessary to shade the price of \$14 at the furnace, which, however, represents the current market. We quote for Chicago delivery, except for local irons, which are f.o.b. furnace, the following prices on prompt shipments:

Lake Superior charcoal	\$16.50 to \$17.00
Northern coke foundry, No. 1	14.50 to 15.00
Northern coke foundry, No. 2	14.00 to 14.50
Northern coke foundry, No. 3	13.50 to 14.00
Northern Scotch, No. 1	16.00
Southern coke, No. 1 foundry and No. 1 soft	14.85
Southern coke, No. 2 foundry and No. 2 soft	14.35
Southern coke, No. 3	14.10 to 14.35
Southern coke, No. 4	13.85 to 14.10
Southern gray forge	13.60 to 13.85
Southern mottled	13.60 to 13.85
Malleable Bessemer	14.35 to 14.50
Standard Bessemer	16.75
Basic	14.75
Jackson County and Kentucky silvery, 6 per cent.	16.40
Jackson County and Kentucky silvery, 8 per cent.	17.40
Jackson County and Kentucky silvery, 10 per cent.	18.40

**Rails, Track Supplies and Railroad Equipment.**—The situation as regards rails is unchanged, with no current orders but a large prospective tonnage. Buying of track spikes and bolts is fairly heavy, but rail joints are not so much in demand. Purchases of cars reported the past week included 750 box cars by the Soo line from the American Car & Foundry Company and 150 from the same company by the Live Poultry Transportation Company, Chicago. In addition to the 2500 cars mentioned last week, the Chicago & Northwestern ordered 600 automobile cars from the Western Steel Car & Foundry Company and 500 flat cars from the Standard Steel Car Company. The Missouri Pacific is reported to have bought from the American Car & Foundry Company 1000 gondolas, 500 box cars, 500 automobile cars and 500 furniture cars and from the Standard Steel Car Company 500 box cars. Inquiries pending include 750 all-steel, bottom dump cars for the Elgin, Joliet & Eastern and 500 refrigerator cars for the Chicago & Northwestern. The tendency of car builders to ask higher prices is said to arise not so much because of their well-filled order books as because of their inability to buy steel at as low prices as formerly. We quote standard railroad spikes at 1.50c. base; track bolts, with square nuts, 1.90c. base, all in carload lots, Chicago; standard section Bessemer rails, 1.28c.; open hearth, 1.34c.; light rails, 40 to 45 lb., 1.16c. to 1.20c.; 30 to 35 lb., 1.19c. to 1.24c.; 16, 20 and 25 lb., 1.20c. to 1.25c.; 12 lb., 1.25c. to 1.30c.; angle bars, 1.50c., Chicago.

**Structural Material.**—With the exception of the 6000 tons for the Hub building at Chicago, bids for which were opened last week with the Vierling Steel Works low bidder, the architectural tonnage was light, aggregating less than 2500, of which the largest item was 1383 tons for the new rail mill of the Minnesota Steel Company, Duluth, awarded to the American Bridge Company. The Decatur Bridge Company will fabricate 154 tons for the University of Illinois; the Minneapolis Steel & Machinery Company, 363 tons for a high school building in Minneapolis; the Wisconsin Bridge & Iron Company, 165 tons for bridge spans for the Chicago, Indianapolis & Louisville Railroad at Lafayette, Ind. E. S. Hall also let the contract for a factory building in Chicago. General structural tonnage continues satisfactorily heavy and structural prices have been bolstered up in a measure by the strength of bars and plates. Prices for fabricated material are still low. We quote for mill shipment, Chicago, 1.30c. to 1.33c., and from store 1.60c.

**Plates.**—Western plate mills have booked an exceedingly heavy tonnage of plates and the accumulation of orders would interfere with the acceptance of prompt delivery specifications. It is understood that the mills making only boiler and tank plates have taken much less business proportionately than the mills supplying material for car building. Where the mills are willing to do so customers show an inclination to contract ahead for three and six months, paying an advance over prompt shipment prices. We quote for

Chicago delivery, mill shipment, prompt, 1.30c. to 1.33c., and for delivery through the first half 1.38c. From store we quote 1.60c.

**Sheets.**—Concessions and irregularities in the sheet market continue despite a good current business to such an extent that the smaller mills, particularly those buying billets and sheet bars, are scarcely a factor in the market. As regards sheets, the market shows less possibility of returning strength than in other lines. We quote Chicago prices as follows: Carload lots, from mill, No. 28 black sheets, 2.03c. to 2.08c.; No. 28 galvanized, 3.03c. to 3.08c.; No. 10 blue annealed, 1.53c. to 1.58c. Prices from store, Chicago, are: No. 10, 1.90c.; No. 12, 1.95c.; No. 28 black, 2.30c.; No. 28 galvanized, 3.35c.

**Bars.**—The first steps toward higher prices have been taken by two manufacturers of bars in advancing their quotations to the full Pittsburgh basis of 1.15c., or 1.33c., Chicago. As other mills are still glad to take desirable orders a rather wide spread in prices exists and as low as 1.23c. is made, with the market for the average order resting at 1.25c. to 1.30c. Bar iron tonnage shows little improvement and the market is soft at 1.15c., Chicago. We quote as follows, f.o.b. Chicago: Soft steel bars, 1.23c. to 1.33c.; bar iron, 1.15c. to 1.20c.; hard steel bars rolled from old rails, 1.15c. to 1.20c. From store: Soft steel bars, 1.55c. to 1.60c., Chicago.

**Wire Products.**—A reaction of \$1 a ton on plain wire and wire nails from the low quotations is announced, making the base quotations \$1.35 and \$1.55 respectively, Pittsburgh. Much depleted stocks of wire products at all distributing points have brought out some additional business and manufacturers in anticipation of spring trade have been contracting to a limited extent. We quote: Plain wire, No. 9 and coarser, base, \$1.53; wire nails, \$1.73; painted barb wire, \$1.73 to \$1.78; galvanized, \$2.03 to \$2.08; polished staples, \$1.78 to \$1.83; galvanized, \$2.08 to \$2.13, all Chicago.

**Cast Iron Pipe.**—The demand for cast iron pipe at this season is very limited, and an absence of municipal lettings of importance is not unexpected. Several orders from the smaller towns are noted. We quote as follows, per net ton, Chicago: Water pipe, 4-in., \$26.50; 6 to 12-in., \$24.50; 16-in. and up, \$24, with \$1 extra for gas pipe.

**Old Material.**—Under the conditions now prevailing in this market it is difficult to determine closely what may be considered the market price of each grade of material. The railroads are receiving prices reckoned on the basis of what the market is expected to be 30 or 60 days hence, while the scrap consumers decline to buy except on a considerably lower basis. There is a sharp demand for foundry scrap, and a considerable tonnage of heavy melting steel has been bought at \$10.25, but rolling mill grades show less activity. There is a moderate aggregate tonnage moving but it is in small lots, the consumers contenting themselves with scattered purchases that represent only their minimum requirements. The situation is not likely to change from gradually advancing prices while the tonnage of finished material continues heavy, or to a rapid advance until the prices of finished material improve. We quote for delivery at buyers' works, Chicago and vicinity, all freight and transfer charges paid, per gross ton, as follows:

Old iron rails.....	\$14.50 to \$15.00
Old steel rails, rerolling.....	12.25 to 12.75
Old steel rails, less than 3 ft.....	10.75 to 11.25
Relaying rails, standard section, subject to inspection.....	24.00
Old car wheels.....	13.00 to 13.50
Heavy melting steel scrap.....	10.00 to 10.50
Frogs, switches and guards, cut apart.....	10.00 to 10.50
Shoveling steel.....	9.50 to 10.00
Steel axle turnings.....	8.00 to 8.50

The following quotations are per net ton:

Iron angles and splice bars.....	\$12.25 to \$12.75
Iron arch bars and transoms.....	13.00 to 13.75
Steel angle bars.....	9.25 to 9.75
Iron car axles.....	17.00 to 17.50
Steel car axles.....	15.25 to 15.75
No. 1 railroad wrought.....	10.75 to 11.25
No. 2 railroad wrought.....	9.75 to 10.25
Steel knuckles and couplers.....	9.75 to 10.25
Steel springs.....	9.75 to 10.25
Locomotive tires, smooth.....	13.25 to 13.75
Machine shop turnings.....	6.00 to 6.50
Cast and mixed borings.....	5.25 to 5.50
No. 1 busheling.....	8.25 to 8.75
No. 2 busheling.....	5.75 to 6.25
No. 1 boilers, cut to sheets and rings.....	6.75 to 7.25
Boiler punchings.....	12.00 to 12.50
No. 1 cast scrap.....	10.75 to 11.25
Stove plate and light cast scrap.....	9.00 to 9.50
Railroad malleable.....	10.00 to 10.50
Agricultural malleable.....	8.50 to 9.00
Pipes and flues.....	7.50 to 8.00

## Philadelphia

PHILADELPHIA, PA., December 12, 1911.

While there has been less large lot buying the volume of moderate orders has been fully maintained. In foundry pig iron speculative buying has developed to some extent. Pig iron asking prices have in instances been advanced. Statistics compiled by the Eastern Pig Iron Association show a marked increase in orders. Stocks of foundry grades are lower, but overbalanced by an accumulation of other grades, making a slight increase in the total as compared with the previous month. Virginia furnaces show a decrease in stocks due to shipments being heavier than the current production. The low range of recent quotations in practically all classes of rolled products is less in evidence. There is considerable railroad business, particularly in the way of rolling stock, under negotiation. The Philadelphia Rapid Transit Company has placed orders for 500 "near side" cars and may increase the order to 800. The Pennsylvania Railroad has not yet formally announced its 1912 rail requirements. A considerable quantity of furnace coke is under negotiation, but contracts develop slowly. There is a better feeling in old material. Rolling mills are showing more interest in the situation, but the strength in heavy melting steel is largely due to efforts of dealers.

**Pig Iron.**—A large volume of business is moving in foundry grades. The aggregate for the week, while not up to the record totals of the last few weeks, has been very satisfactory when the character of the business closed is taken into consideration. The bulk of the large inquiries recently before the trade have been closed, although the same buyers would take additional quantities for more extended deliveries if sellers generally would take on the business. In this way some speculative buying covering the second quarter of the year has been put through at prices quoted for first quarter shipment. The Pennsylvania Railroad has closed against its recent inquiry for 5000 tons for first quarter, the bulk of the business, it is said, going to Central Western furnaces. A number of lots of No. 2 X and No. 2 plain foundry grades, ranging from 500 to 1000 tons, have been taken by various classes of consumers at prices ranging from \$14.85 to \$15.10 for No. 2 X, delivery over the first quarter and half. While a slightly lower price, \$14.75, delivered, for No. 2 X is occasionally heard, the quotation is confined to exceptional transactions. In the same manner \$15.25 has been done, but is usually confined to consumers who pay the slight advance rather than drop a particular brand from their mixtures. Several Eastern furnaces are now holding to \$15.25 as a minimum quotation. Cast iron pipe makers have not been taking on any large quantities of iron, only small purchases of off irons being noted. These consumers are still in the market for a considerable amount for forward delivery, but makers have not met their ideas as to prices. Southern No. 2 foundry has been sold to stove interests in this district in lots ranging from 200 to 500 tons for first half at \$10, Birmingham. Virginia foundry grades have been moving more freely. Several round lots of No. 2 X, for delivery over the first half, have been sold at \$12.50, furnace, although for prompt and first quarter delivery \$12.25 is pretty generally done. More interest is shown in forge iron for rolling mill purposes; inquiries for 500-ton lots for early delivery are out, while sales of the same quantities have been made at \$14.25, delivered. While there is no demand for basic iron from consumers in this immediate district melters in the central part of the State have been making purchases for near future and more extended delivery. These transactions have been without definite confirmation, although it is reported that in addition to the sale of 7500 tons reported last week a purchase of several thousand tons of Southern basic has been made by another interest in that district. The consumer who was in the market for 1000 tons of basic, for Western shipment, purchased 1500 tons and will probably take on an additional 1000 tons for April and May shipment. Western basic was taken. A better movement in standard analysis low phosphorus iron is noted, sales of lots ranging from a few hundred up to 1000 tons having been made at \$19.25 to \$19.50 for local as well as Western delivery. Quotations for standard brands, delivered in buyers' yards in this vicinity, during the first quarter and half of the year, range as follows:

Eastern Pennsylvania No. 2 X foundry.....	\$14.85 to \$15.25
Eastern Pennsylvania No. 2 plain.....	14.60 to 15.00
Virginia foundry.....	15.00 to 15.50
Gray forge.....	14.25 .. 14.25
Basic.....	14.25 to 14.50
Standard low phosphorus.....	19.25 to 19.50

**Iron Ore.**—Reports of tentative negotiations in connection with both foreign and domestic grades are heard of, but no developments have resulted. Importations during the week include 8250 tons from Cuba, 4069 tons from Sweden and 5900 tons from Newfoundland.

**Ferroalloys.**—Little demand is noted in this vicinity, although sales for Western delivery are being more freely made. Small lots of 80 per cent. ferromanganese have been sold at \$38.50, Baltimore, which price now appears firmly established. A sale of 150 tons of 50 per cent. ferrosilicon is reported at \$70, delivered. No inquiry of importance for 11 to 12 per cent. ferrosilicon is reported.

**Billets.**—A slightly better run of orders for early shipment encourages the makers. Considerable inquiry for requirements during 1912 is before the trade, and one sale of 1000 tons of open-hearth rolling billets has been made for shipment over the first half at \$21.50, delivered. Low quotations recently noted have been withdrawn and, while \$21.40, delivered, for prompt shipment can still be done, some makers are holding for \$22.40, on which delivery extends over the first quarter. Forging billets are in fair demand, with sales usually in small lots at \$26.40 to \$27.40, delivered here.

**Plates.**—Eastern mills continue to book a fair amount of moderate sized business, which, together with specifications on old orders, enables mills to hold their recent productive rate. While there is considerable business in sight in boat, bridge and tank plates, orders of any size develop slowly. Mills in this district still refuse to accept contracts on which deliveries are extended and maintain their minimum quotation for ordinary plates at 1.30c., delivered, this quotation applying only on desirable business. On the usual run of small, miscellaneous business they quote 1.35c. to 1.40c., delivered.

**Structural Material.**—While there is some good building work under negotiation, immediate business in this vicinity has been less active. Awards on the steel work for the Dock street pier, 1000 tons, will be made in the near future, while bids for the general contract on the Stock Exchange building go in this week. A decision in the matter of the new erecting shop of the Baldwin Locomotive Works at Eddystone is expected this week. Several good bridge projects are under negotiation, while orders for several small bridges have been placed. The demand for plain structural shapes has been somewhat quiet, and some of the mills in this district are less actively engaged. Prices for plain structural shapes are on a better basis, 1.30c., delivered, being the usual minimum quotation, with 1.35c. named for small lots.

**Sheets.**—Mills are actively engaged with the usual rush of year end business to cover requirements over the usual holiday idleness. Efforts to get makers to accept contracts to cover the first half of the year are still being made, but mills refuse to accept such business. Most orders are for small lots on which deliveries are being urged. Prices are firm at 2c. to 2.05c., delivered here, for Western sheets, while Eastern mills making smooth, loose rolled sheets, obtain 1/4c. to 1/2c. per lb. advance.

**Bars.**—While the volume of business has not materially increased, the situation regarding prices has improved in that the low quotations for iron bars which have been quoted by some mills have been withdrawn. For early delivery the minimum quotation for iron bars is named at 1.17 1/2c., mill, while leading producers, who have not met the recent low prices, maintain a minimum of 1.20c., mill. The range of prices for iron bars, in moderate lots, delivered in this territory, is from 1.25c. to 1.32 1/2c. Steel bars are firm at 1.25c. to 1.30c., delivered here, with a moderate business moving.

**Coke.**—Negotiations are still pending for several large blocks of furnace coke, for first half and all of 1912 shipment. Producers are not inclined to meet consumers' views as to prices, and meanwhile furnaces take odd lots of prompt coke to cover near future needs. The movement in foundry coke is light, few contracts having been placed, although deliveries are going forward freely on orders in hand. Prices are unchanged, the following range per net ton being named for deliveries in buyers' yards in this district:

Connellsville furnace coke.....	\$3.65 to \$4.05
Foundry coke.....	4.15 to 4.50
Mountain furnace coke.....	3.40 to 3.65
Foundry coke .....	3.95 to 4.40

**Old Material.**—Rolling mills show more interest in the market, moderate purchases of various grades being made, with slightly higher prices paid in instances. The situation in heavy melting steel is unchanged.

Mills are not openly in the market, while dealers are not offering this grade at present prices. Dealers pay \$12 to \$12.25, delivered, for No. 1 heavy melting steel, while mills would probably not offer over \$12 were they in the market, unless the material was exceptionally high grade. Borings and turnings show a better movement, as do also old car wheels and wrought scrap. The demand for machinery cast is increasing, with numerous moderate lot sales reported. The following range of prices about represents quotations at which the ordinary current business for prompt shipment can be done for delivery in buyers' yards, eastern Pennsylvania and nearby points, taking a freight rate from Philadelphia varying from 35c. to \$1.35 per gross ton, for shipment ranging from prompt to the remainder of the year:

No. 1 heavy melting steel scrap.....	\$12.00 to \$12.50
Old steel rails, rerolling (nominal).....	13.00 to 13.50
Low phosphorus heavy melting steel scrap.....	15.50 to 16.00
Old steel axles.....	17.00 to 17.50
Old iron axles.....	21.00 to 21.50
Old iron rails.....	15.50 to 16.00
Old car wheels.....	12.50 to 13.00
No. 1 railroad wrought.....	14.75 to 15.25
Wrought iron pipe.....	11.50 to 12.00
No. 1 forge fire.....	10.25 to 11.00
No. 2 light iron (nominal).....	6.75 to 7.25
Wrought turnings.....	9.00 to 9.50
Cast borings.....	8.25 to 8.75
Machinery cast.....	13.00 to 13.50
Railroad malleable (nominal).....	11.50 to 12.00
Grate bars, railroad.....	10.00 to 10.50
Stove plate.....	10.00 to 10.50

### Cleveland

CLEVELAND, OHIO, December 12, 1911.

**Iron Ore.**—On December 1 there was 9,270,341 tons of ore on Lake Erie docks as compared with 9,426,681 tons on the same docks December 1, 1910, or a decrease of 156,341 tons. The ore that will be on Lake Erie docks and in furnace yards May 1, 1912, counting on the present rate of consumption, is estimated at 19,500,000 tons. This estimate assigns 14,300,000 tons to the Steel Corporation and the remainder, 5,200,000 tons, to the independent furnace companies. In view of the fact that it has been customary for the Steel Corporation to keep nearly a year's supply of ore on hand to protect itself in case of labor troubles at mines or on the lakes, this tonnage is not regarded as large. Ore sellers regard these figures as pointing to a healthy condition in the trade next spring. While the tonnage of ore on docks December 1 is practically the same as a year ago, stocks in furnace yards on December 1, 1910, were heavy, being estimated at 23,174,000 tons, making a total tonnage on that date on docks and in furnace yards of 32,600,000 tons. While figures are not now available, it is known that the tonnage in furnace yards on December 1 was considerably less than on the corresponding date a year ago. The figures on the estimated tonnage on Lake Erie docks and in furnace yards May 1, 1912, bear out former statements regarding the fact that consumers bought very sparingly during the present year and indicate that with smaller stocks on the docks and in the furnace yards May 1, 1912, than on May 1, this year, the outlook in the ore trade the opening of next season will be much better than it was early this year. We quote prices as follows: Old range Bessemer, \$4.50; Mesaba Bessemer, \$4.25; old range non-Bessemer, \$3.70; Mesaba non-Bessemer, \$3.50.

**Pig Iron.**—While the demand in this immediate territory has fallen off somewhat as compared with the two previous weeks local selling agencies report a good volume of sales of foundry iron in surrounding territories. These sales are mostly in lots of 500 tons and under, although one sale of 2000 tons is reported. Nearly all the buying has been for delivery through the first half. A moderate volume of inquiry is still pending, mostly from small consumers. While the recent buying movement has not resulted in any general strengthening of prices one interest which is now well sold up on the output of its Valley furnace is quoting to its trade at a minimum of \$13.25, Valley furnace, for No. 2 foundry. Prices for Cleveland delivery are firm at \$13.25, delivered, for No. 2. For outside shipment local furnaces are selling No. 2 foundry at \$12.75 to \$13. Buyers are able to get the same price for the entire first half as through the first quarter, so that as a rule they are buying a six months' supply. There is a scattering inquiry for Southern iron in lots of 100 to 500 tons for the first half delivery, for which a minimum price of \$10 for No. 2 is generally maintained. Southern Ohio producers have advanced minimum quotations on Ohio

silvery iron 50c. a ton, \$15.50 now being generally maintained for 8 per cent. silicon for spot shipment and for the first half. We quote as follows for prompt shipment and for the first half, delivered Cleveland:

Bessemer	\$14.90 to \$15.15
Basic	13.25
Northern foundry, No. 2	13.25
Southern foundry, No. 2	14.35
Gray forge	12.50
Jackson County silvery, 8 per cent. silicon	17.05

**Coke.**—A local furnace has purchased furnace coke for its first half requirements, amounting to about 8000 tons a month. There is little demand for foundry grades, there being practically no inquiry for contracts. We quote standard Connellsville furnace coke at \$1.50 to \$1.55 per net ton, at oven, for spot shipment and \$1.60 to \$1.65 for the first half. Standard Connellsville foundry coke is held at \$2 to \$2.15 for spot shipment and \$2.15 to \$2.40 for contract.

**Finished Iron and Steel.**—Mill agencies all report a good volume of orders in steel bars, plates and structural material. The price situation has further improved and there appears to be a strong disposition among sellers to adhere strictly to the general quotations. Steel bars are firm at 1.10c., Pittsburgh, for prompt shipment and in most cases at 1.15c. for the first quarter. Carload sales for prompt shipment have been made at the higher price. Structural material and plates are generally sold at 1.15c., Pittsburgh, for prompt shipment and 1.20c. for the first quarter. Mills are generally avoiding sales for delivery beyond the first quarter. The American Bridge Company has taken the steel for the Lawrence hotel, Erie, Pa., 1200 tons, and 525 tons for a new building for the Republic Rubber Company, Youngstown, Ohio. The demand for sheets is fairly active and prices are firmer, although the recent low prices of 1.80c. for No. 28 black and 2.80c. for No. 28 galvanized have not entirely disappeared. Rivet prices continue weak. Local makers quote structural rivets at 1.45c. to 1.50c., Pittsburgh, and boiler rivets at 1.55c. A local maker has sold 8000 tons of open hearth billets to a nearby consumer for the first half delivery on the basis of \$19, Youngstown. There is some demand for forging billets, which are quoted at \$26, Cleveland, although some sellers are shading this price 50c. The demand for iron bars is light and only one of the local mills is running. We quote iron bars at 1.20c., Cleveland.

**Old Material.**—The market has taken on a firmer tone during the week owing to a spurt of activity in steel making scrap, which appeared to have been confined mostly to dealers. Some dealers who had sold short wanted to cover in a hurry and this forced prices up, the advance in heavy steel scrap amounting to 50c. a ton. Local consumers are now offering \$11.75 to \$12 for heavy steel scrap. Sales of turnings to dealers are reported at \$7. Railroad lists during the week brought out good prices, practically all of this scrap going to consumers, who offered better prices than the dealers. The only additional railroad list reported is from the Norfolk & Western, which will close December 20. Dealers' prices per gross ton, f.o.b. Cleveland, are as follows:

Old steel rails, rerolling	\$12.25 to \$12.75
Old iron rails	14.00 to 14.50
Steel car axles	17.00 to 17.50
Heavy melting steel	11.50 to 12.00
Old car wheels	11.75 to 12.25
Relying rails, 50 lb. and over	22.50 to 23.50
Agricultural malleable	10.50 to 11.00
Railroad malleable	11.75 to 12.00
Light bundled sheet scrap	9.50 to 10.00

The following prices are per net ton, f.o.b. Cleveland:

Iron car axles	\$18.50 to \$19.00
Cast borings	6.25 to 6.50
Iron and steel turnings and drillings	6.75 to 7.00
Steel axle turnings	7.25 to 7.75
No. 1 busheling	9.00 to 9.50
No. 1 railhead wrought	11.00 to 11.25
No. 1 cast	11.00 to 11.50
Stove plate	9.00 to 9.25
Bundled tin scrap	11.00 to 11.50

### Birmingham

BIRMINGHAM, ALA., December 11, 1911.

**Pig Iron.**—There is a marked disposition to hold more firmly to the \$10 schedule for any delivery up to July 1. Undoubtedly there has been a very large tonnage of Southern foundry and basic iron sold since November 1, but a great deal of this iron has been sold at a concession below the \$10 schedule. During the past

week sales have been made at \$10.25 for No. 2 foundry, but the generally quoted prices for any delivery up to July 1 are as follows, f.o.b. furnace, Birmingham:

No. 1 foundry	\$10.50
No. 1 scft	10.50
No. 2 foundry	10.00
No. 3 foundry	9.50
No. 4 foundry	9.25
Gray forge	9.00
Standard basic	10.00
Off basic	9.50

**Cast Iron Pipe.**—The makers report but little change in the situation. All foundries now in operation will doubtless shut down for a week or ten days for the Christmas holidays, taking advantage of this shutdown to take their inventory for the close of the year. Prices are as follows, per net ton, f.o.b. cars here: 4 to 6 in., \$23; 8 to 12 in., \$22; 12 in. and over, \$21, with \$1 per ton extra for gas pipe. Special fittings may be quoted at \$45 to \$50 at foundry.

**Old Material.**—The scrap market has not shown any improvement in price. Notwithstanding the large sales of pig iron there is so little interest noted in old material that it is really hard to say what is the market price. Dealers continue to quote, f.o.b. yard here, per gross ton, as follows:

Old iron axles (light)	\$12.00 to \$12.50
Old steel axles (light)	11.00 to 11.50
Old iron rails	11.00 to 11.50
No. 1 railroad wrought	9.50 to 10.00
No. 2 railroad wrought	8.00 to 8.50
No. 1 country wrought	6.00 to 6.50
No. 2 country wrought	5.50 to 6.00
No. 1 machinery cast	8.00 to 8.50
No. 1 steel	7.50 to 8.00
Tram car wheels	7.00 to 7.50
Standard car wheels	9.00 to 9.50
Light cast and stove plates	5.50 to 6.00

### Cincinnati

CINCINNATI, OHIO, December 13, 1911.—(By Telegraph).

**Pig Iron.**—Interest continues centered on Southern iron, and prompt shipment prices are firmer. The recognized quotation for December movement is now \$10, Birmingham basis, for No. 2 foundry. However, at this same figure there is some business being booked for shipment through the first half. Several producers are asking \$10.25 to \$10.50 on strictly second quarter business but no sales at the last named figure can be reported in this territory. More open inquiries are coming in, and customers are doing considerable shopping round before placing their orders. Local agencies are working on two nice sized prospective orders in the Northwest for Southern Nos. 1 and 2 foundry for last half shipment. For the same delivery 500 tons of Southern No. 2 foundry is wanted by a southern Ohio melter, and an Indiana consumer is asking for 1000 tons each of Northern and Southern foundry grades. Numerous other scattered inquiries are before the trade, and December will probably make a better showing, so far as the tonnage booked is concerned, than the corresponding month of last year. Among recent sales are 2000 tons of No. 1 soft for a Northwestern melter, booked at \$10.50, Birmingham, for first half movement. A southern Ohio melter took 400 tons of No. 2 foundry at \$10 and Illinois consumers placed several fair-sized orders, all for delivery through the first half. An Indiana manufacturer bought 500 tons of 6 per cent. Ohio silvery at \$14 at furnace. Malleable is in fair demand and is quotable at \$13. Ironton, which is also the ruling price on Northern No. 2 foundry for any delivery until July 1. For shipment during the next six months a central Western firm booked 1200 tons of Southern gray forge at \$9.25, Birmingham. Based on freight rates of \$3.25 from Birmingham and \$1.20 from Ironton we quote, f.o.b. Cincinnati, as follows for prompt shipment:

Southern coke, No. 1 foundry and 1 soft	\$13.75 to \$14.00
Southern coke, No. 2 foundry and 2 soft	13.25 to 13.50
Southern coke, No. 3 foundry	12.75 to 13.25
Southern coke, No. 4 foundry	12.50 to 13.00
Southern gray forge	12.50 to 13.00
Ohio silvery, 8 per cent. silicon	16.95 to 17.20
Lake Superior coke, No. 1	14.70 to 14.95
Lake Superior coke, No. 2	14.20 to 14.45
Lake Superior coke, No. 3	13.70 to 13.95
Basic, Northern	14.20 to 14.45
Standard Southern car wheel	25.25 to 25.50
Lake Superior car wheel	19.00

(By Mail.)

**Coke.**—A contract calling for about 6000 tons of furnace coke for a Southern consumer was closed by a Wise County producer last week. Sales of foundry coke are light, and those foundries not already covered with contracts are simply buying to fill immediate re-

quirements. Furnace coke continues to show signs of strength, so far as prices are concerned, and is quotable in the Connellsville field around \$1.55 to \$1.65 per net ton at oven, with Wise County and Pocahontas brands bringing 5c. to 10c. per ton advance over these quotations. Foundry grades, in all three fields, are quotable at about \$1.90 to \$2 for prompt shipment, with some of the better brands bringing as high as \$2.25 on future shipment business.

**Finished Material.**—In many lines a spurt of activity is reported, but the near approach of the holiday season will probably soon put the market back into the same old rut. Prices continue firm, and 1.10c., Pittsburgh, is considered minimum on steel bars. Structural material is quoted at 1.15c., Pittsburgh. The local warehouse price on steel bars remains around 1.60c. base, and that on structural material, cut to lengths, 1.70c. Sheets are in a trifle better demand.

**Old Material.**—Sentimentally, the market is in better shape, but consumers generally are unwilling to pay maximum prices demanded by dealers, and there is not very much business being done. The railroads are reported to be offering scrap material as fast as it is accumulated. The rolling mills in this section are probably using a slightly increased tonnage over requirements a few weeks ago. The minimum figures given below about represent what buyers are willing to pay for delivery at their yards in southern Ohio and Cincinnati, and the maximum quotations the selling prices f.o.b. at yards:

No. 1 railroad wrought, net ton.....	\$9.75 to \$10.50
Cast borings, net ton.....	4.50 to 5.00
Steel turnings, net ton.....	5.50 to 6.00
No. 1 cast scrap, net ton.....	9.50 to 10.25
Burnt scrap, net ton.....	6.50 to 7.00
Old iron axles, net ton.....	16.25 to 16.75
Bundled sheet scrap, gross ton.....	6.25 to 6.75
Old iron rails, gross ton.....	13.00 to 13.75
Relying rails, 50 lb. and up, gross ton.....	20.75 to 21.50
Old car wheels, gross ton.....	10.50 to 11.00
Heavy melting steel scrap, gross ton.....	9.50 to 10.00

### St. Louis

ST. LOUIS, Mo., December 11, 1911.

The feeling in the market here continues to grow measurably better and there is a belief that prices will show improvement soon. The growing tendency to anticipate requirements and the prompt shipment demands indicate a more profitable business in the near future.

**Pig Iron.**—Most of the large buyers seem to have filled their requirements, at least for the first quarter, and some for the first half, and the buying by foundrymen is now the bright indication of the market. In some instances there are requests for shipments in anticipation of contracts and in practically all cases there is demand for prompt shipment on specifications. There is more melting in this district that at any time during the current year and on the other side of the situation come advices from furnaces that capacity has been completely booked for the first quarter. The sales to the smaller buyers are improving. Sales during the week include 3000 tons of different grades to the United States Radiator Corporation and 500 tons of Lake Superior car wheel iron. There are inquiries out for 500 tons more of the Lake Superior iron and still another for 2000 tons from the American Car & Foundry Company. Prices remain at \$10 for No. 2 Southern, Birmingham basis, but there is a disposition to put No. 2 Northern up from \$13 to \$13.50, Iron-ton, because of demands upon capacity.

**Coke.**—The market remains in a rather quiet condition, with a good aggregate movement, but few large individual orders, about the largest being for 1000 tons for first quarter delivery.

**Finished Iron and Steel.**—Buyers are anxious to contract for considerable tonnage. Most of the orders are for comparatively small lots for immediate use, though there is a considerable demand from fabricators for stock. The bids were received to-day for the Barr building with requirements of 10,000 tons of structural material and 1800 tons of reinforcing bars. In bars the specifications have been liberal, all for quick shipment. The price is more steadily maintained than for a long time. In standard section steel rails there is no activity, owing largely to the between seasons period. Plates have been moving up to the normal requirements and the price has been on a par with structural material, which is pretty well held at 1.15c., Pittsburgh. Light rails have shown some demand from the coal mines, but not so much as the season usually warrants. The lumber roads are taking nothing. Track

fastenings have been in seasonable request at steady prices.

**Old Material.**—The better feeling noted in the scrap market last week continues and the lists reported last week were closed later at considerably better prices than has been the case in some time. There is a better demand from the steel producers and foundries than for rolling mill uses. No new lists have appeared in this district during the past week. In general dealers have the optimistic spirit well established. We quote dealers' prices, f.o.b. St. Louis, as follows, per gross ton:

Old iron rails.....	\$12.50 to \$13.00
Old steel rails, re-rolling.....	12.00 to 12.50
Old steel rails, less than 3 ft.....	11.00 to 11.50
Relying rails, standard section, subject to inspection.....	21.00 to 21.50
Old car wheels.....	12.00 to 12.50
Heavy melting steel scrap.....	11.00 to 11.50
Frogs, switches and guards cut apart.....	11.00 to 11.50

The following prices are per net ton:

Iron fish plates.....	\$10.50 to \$11.00
Iron car axles.....	17.50 to 18.00
Steel car axles.....	15.50 to 16.00
No. 1 railroad wrought.....	11.00 to 11.50
No. 2 railroad wrought.....	10.00 to 10.50
Railroad springs.....	9.75 to 10.25
Locomotive tires, smooth.....	13.50 to 14.00
No. 1 dealers' forge.....	7.50 to 8.00
Mixed borings.....	6.00 to 6.50
No. 1 busheling.....	9.00 to 9.50
No. 1 boilers, cut to sheets and rings.....	7.50 to 8.00
No. 1 cast scrap.....	10.00 to 10.50
Stove plate and light cast scrap.....	7.50 to 8.00
Railroad malleable.....	8.00 to 8.50
Agricultural malleable.....	7.00 to 7.50
Pipes and flues.....	8.00 to 8.50
Railroad sheet and tank scrap.....	7.50 to 8.00
Railroad grate bars.....	7.00 to 7.50
Machine shop turnings.....	7.00 to 7.50

ST. LOUIS, December 13.—(By Telegraph.)—The Barr building contract has been awarded to the Jones & Laughlin Steel Company.

### The German Iron Market

#### A Strong Situation With Further Price Advances

BERLIN, December 1, 1911.

The strength of the iron market continues unabated. The indications are that business is growing better from week to week. The newspapers are daily printing news showing the activity prevailing at various works. It is mentioned, for example that the great Phoenix concern, which holds much the largest allotments in the Steel Works Union, has received such heavy orders for steel bars, plates and wire rods that it has already sold out its capacity into next summer and is now rejecting orders. At the end of last week the heavy plate pool voted an advance of 5 marks and renewed the organization to the end of 1912. The new prices range between 127 and 129 marks. On the other hand, the Siegerland ore association at the last moment abandoned its decision to raise ore prices for 1912 and decided instead that the mining companies should try to increase their output to the full extent of their allotments.

Conditions in the pig iron market are very active. The new syndicate has already taken orders for the first half of 1912 in excess of the total allotments. It is understood that consumers have been especially eager to contract for iron, as they look for higher prices for the second half of the year. They are mostly buying now to the end of June. There is also considerable buying of supplementary amounts for delivery before the end of this year.

Work in the heavy lines of the Steel Works Union continues at about the pace previously described—great activity in semi-manufactured material, but a quiet tone in structural shapes and rails, with considerable business in rails for foreign account. In bars and plates, too, the activity has grown more pronounced. The improvement in band iron continues. There is better business also in piping and in wire products. Steel castings are in considerably better demand at higher prices.

#### Increase in Steel Works Allotments

Surprise over the heavily increased allotment demands in the Steel Works Union continues. The figure given last week, 4,500,000 tons, as the amount of the new allotments asked for, will probably have to be increased somewhat, as one concern has only this week come forward with its allotment demand. It is understood that of the 4,500,000 tons increase not less than 3,500,000 tons falls in Class B products (bars, plate, rods, axles, piping, castings and forgings). It

is reported on good authority, however, that a sentiment is gaining ground in the Union in favor of leaving the Class B products entirely outside the combination's scope. Hitherto the Union has only made allotments in them, leaving it to each concern to market its product at its own terms. Now there is a strong disposition to abolish even the allotments and give the works a free hand in the fullest sense of the term. This tendency is evidently due to the fact that the chief obstacles in the way of the renewal of the Union will be found precisely in connection with Class B products for it is seen that, if they be wholly eliminated from the discussions, the problem of prolonging the organization will be greatly simplified. In accordance with this state of things it is reported that the works are now considerably more hopeful regarding the renewal of the Union. Meanwhile probably nothing new will develop in this connection until the next meeting of the combination on December 19. The committee is still working on its task of visiting works to verify their allotment claims.

Expansion is still going on with the iron companies. This week it is announced that the Gutehoffnungshütte, which has just again declared a dividend of 20 per cent., has bought land near Diedenhofen, Lorraine, for the purpose of building another big iron and steel plant. The company reports that it has increased its ore properties abroad, probably referring to purchases in the Briey district across the French border.

The Belgian market continues to send in good news. Two days ago it was announced that the Belgian Steel Works Union had just voted an increase of 1.50 francs per ton for all classes of semi-manufactured steel material; and yesterday's telegrams from Brussels stated that the chief iron producers had just decided to raise the price of foundry iron by 2.50 francs.

The month of November was one of the best for iron shares the Berlin Stock Exchange has had in many months, some of them rising more than 15 points. The removal of political anxieties by the settlement of the Morocco question gave a very strong impulse to the stock market, and this was materially supported by better news from the iron trade.

### Buffalo

BUFFALO, N. Y., December 12, 1911.

**Pig Iron.**—Orders for over 30,000 tons of foundry iron have been booked the past week besides good sized tonnages of malleable and basic, with some large business pending in foundry and malleable grades for first half shipment, decision on which is likely to be soon forthcoming. The booking of heavy tonnages in recent weeks has practically taken up the capacity of some furnace interests over the next few months. With this condition existing some furnaces are advancing prices. While No. 3 and No. 4 iron are still being taken at \$13 at furnace by some interests, the higher silicon irons are not being taken except at higher prices than have prevailed for the past few weeks. Stocks continue to be steadily reduced on furnace yards, with some interests having no stocks at all. The heavy requisitions received involve full capacity of their production for a number of weeks to come. We quote as follows for first half delivery, f.o.b. Buffalo:

No. 1 X foundry.....	\$13.75 to \$14.00
No. 2 X foundry.....	13.50 to 13.75
No. 2 plain .....	13.25 to 13.50
No. 3 foundry.....	13.00 to 13.25
Gray forge .....	13.00
Malleable .....	13.50 to 14.25
Basic .....	14.00 to 14.25
Charcoal .....	16.00 to 17.25

**Finished Iron and Steel.**—The increased buying movement reported last week has continued and practically all the principal buyers in tributary territory have covered for their first quarter requirements. Mills limit delivery to that period except in special instances where customers contracting have been accustomed to make six-month contracts and in such instances, where contracts were closed for a longer period than first quarter, they were made at an advance of \$1 to \$2 per ton over first quarter prices. For steel bars 1.10c., Pittsburgh, is the minimum for remainder of year delivery and 1.15c. for first quarter. For plates and shapes 1.15c. is the ruling price for immediate specification and 1.20c. for contracts for shipment after the first of the year. An advance has been made of \$1 per ton on wire nails and wire products, effective December 11. Orders in these commodities received by the leading interest during the past three months have been the heaviest known for a like period. In fabricated structural lines business continues good for the

season and a large amount of work is under way on local structures. The C. F. Ernst Sons Iron Works has received contract for fabrication and erection of steel for the G. H. Poppenberg Company's building, Buffalo, 150 tons, and the Buffalo Structural Steel Company was lowest bidder and received contract for the Lawrence Hotel, Erie, Pa., on the revised plans calling for 900 tons. The National Construction Company, Syracuse, received the contract for the fabrication and erection of the 500 tons of steel required for the plant extension of the Bagley & Sewall Company at Waterbury, Conn. It is stated that the Grand Trunk Railroad Company is having plans prepared for the rebuilding of the International Bridge between Buffalo and Fort Erie, providing for double tracks, a roadway and footways, requiring a large tonnage of steel and also considerable sheet piling for pier, cofferdams, etc.

**Old Material.**—Consumption is increasing both locally and from outside districts. Quite a few inquiries are in the market for forward delivery, but dealers are not inclined to take short orders at the prevailing prices. The tonnage of scrap held in yards by dealers is decreasing. A good proportion of the scrap materials listed by railroads is being bought direct by consumers. Greater activity is being shown in car wheels, malleable scrap and steel scrap, on which prices are advancing, as shown by the revised schedule given below, which is per gross ton, f.o.b. Buffalo:

Heavy melting steel.....	\$13.00 to \$13.25
Low phosphorus steel.....	15.75 to 16.25
No. 1 railroad wrought.....	14.00 to 14.50
No. 1 railroad and machinery cast scrap.....	13.50 to 14.25
Old steel axles .....	18.50 to 19.00
Old iron axles .....	22.00 to 22.50
Old car wheels.....	12.75 to 13.00
Railroad malleable .....	12.75 to 13.00
Boiler plate, sheared.....	13.75 to 14.25
Locomotive grate bars.....	11.00 to 11.25
Pipe and tank.....	9.75 to 10.25
Wrought iron and soft steel turnings.....	7.25 to 7.50
Clean cast borings.....	6.75 to 7.00

### Boston

BOSTON, MASS., December 12, 1911.

**Old Material.**—A better feeling is evidenced by an advance of 50 cents a ton on wrought turnings and cast borings. The conditions which have produced this result are not local, for buying here shows no increase. It is rather the influence of the Pittsburgh market reflected here from eastern Pennsylvania. The prices quoted below are those offered by the large dealers to the producers and to the smaller dealers and collectors, per gross ton, carload lots, f.o.b. Boston and other New England points, taking Boston rates from eastern Pennsylvania points. In comparison with Philadelphia prices the differential for freight of \$2.30 a ton is included. Mill prices are approximately 50c. a ton more than dealers' prices:

Heavy melting steel.....	\$9.50 to \$10.00
Low phosphorus steel.....	11.45 to 11.95
Old steel axles .....	14.00 to 14.50
Old iron axles .....	17.00 to 18.00
Mixed shafting .....	12.75 to 13.25
No. 1 wrought and soft steel.....	10.50 to 10.75
Wrought iron pipe.....	8.75 to 9.00
Skeleton (bundled) .....	7.00 to 7.50
Cotton ties .....	7.00 to 7.50
No. 2 light .....	4.50 to 5.00
Wrought turnings .....	5.50 to 6.00
Cast borings .....	5.00 to 5.50
Machinery, cast .....	12.50 to 13.00
Malleable .....	9.25 to 9.75
Grate bars .....	6.00 to 6.50
Stove plate .....	8.00 to 8.50

### New York

NEW YORK, December 13, 1911.

**Pig Iron.**—Business has fallen off from the rate of the two preceding weeks. Several transactions have been closed in New Jersey, including one of 1000 tons of No. 2 foundry iron, another of 600 tons, and several lots ranging from 300 to 500 tons. New England seems not to have been much of a buyer in the past week. Less is heard of the low prices on shipments from Buffalo furnaces, and in that district as well as in Eastern Pennsylvania some sellers have all the iron they care to take for the present at the sharply competitive prices recently ruling. The situation seems to be that with enough business to occupy their present furnace capacity for a number of weeks these sellers prefer to wait and see how the situation develops. It should be said, however, that at \$13.25 and \$13.50 for No. 2 X iron at Buffalo and at \$14.25 and \$14.50 for No. 2 X iron at Eastern Pennsylvania furnace, which are the new asking prices of some sellers, busi-

ness is not being booked. The activity of one important seller in Eastern Pennsylvania has made an impression on prices which still lasts and counts in an important way against the expectation of establishing higher prices in the near future. It is evident that the influence of the year end is being felt and that a quieter market may be looked for. Recent sales of basic iron for delivery in the Harrisburg district were at a figure slightly above \$14 delivered. Some pipe iron is still being figured on. Quotations are as follows for northern iron at tidewater: No. 1 foundry, \$15 to \$15.25; No. 2 X, \$14.75; No. 2 plain, \$14.50 to \$14.75. For southern iron we quote \$15 to \$15.25 for No. 1 foundry and \$14.50 to \$14.75 for No. 2 foundry.

**Finished Iron and Steel.**—Prices seem to have retained their backbone though there has been no noticeable increase in the volume of business. Different offices have decidedly different views of the present conditions, based largely on the activity of mills they represent. It is intimated by some sellers that buyers who hesitate too long concerning even first quarter business may, particularly if they wait until after the first of the year, find a range of prices slightly higher than now obtains. The effect of the steady influx of orders on the stiffening process is likely to be accentuated through the reduced rate of mill production commonly experienced in severe weather. One interesting development is noted in the structural field having a bearing on present prices. Bids are asked for work which cannot possibly be erected for months, the projects sometimes requiring the demolition of the structures to be replaced. A leading source of encouragement seems to be the pleasing aggregate of the small orders for relatively prompt shipment. There is no new inquiry of import in the car building line; a number of very large Western rail contracts are at this writing still pending, and a report that prices on standard types of car have been advanced seems to be without foundation. The market for steel bars remains at 1.10c., Pittsburgh, with some sellers willing to sell at 1.10c. for first quarter. Plates are sold for 1.15c. and upward, with a surprising range between the minimum and the maximum, influenced no doubt by the business relations between buyer and seller. There is no special activity in plates, and inquiry in structural lines is still scarce. The largest new project, for which bids will soon be asked, is the Auerbach candy factory, 2500 tons; a marine hospital at Sailors' Snug Harbor, Staten Island, 500 tons, and inquiries are about to be made by the Delaware, Lackawanna & Western Railroad for 1912 bridge-work requirements. Of structural awards since the last report mention may be made of the Monahan Express building, 1000 tons, to Milliken Brothers; bridge at Lynn, Mass., for the Boston & Maine, 150 tons, to the New England Structural Company; trolley platform bridge for New York at St. George, S. I., 1700 tons, to the American Bridge Company, and the steel work for the Guaranty Trust building on Broadway, 1200 tons, to Post & McCord. It is interesting to add that in the last week or ten days the Eastern Steel Company has contracted to furnish 10,000 tons of plain material for car manufacturing purposes. Quotations remain as follows: Steel bars, 1.26c. to 1.31c.; plates and plain structural material, 1.31c. to 1.36c.; bar iron, 1.25c. to 1.30c., all New York. Plain material and plates from store, New York, 1.60c. to 1.70c.

**Old Material.**—Notwithstanding the better feeling recently prevailing in the old material market, it is difficult to secure higher prices. Heavy melting steel scrap is but a trifle stronger, consumers not being disposed to pay more than a slight advance for future delivery. Transactions seldom reach beyond moderate sized quantities in any class of scrap. Dealers' prices, per gross ton, New York and vicinity, are as follows:

Old girder and T rails for melting.....	\$9.50 to \$10.00
Heavy melting steel scrap.....	9.50 to 10.00
Relying rails.....	20.00 to 21.00
Rerolling rails (nominal).....	11.25 to 11.75
Iron car axles.....	19.00 to 19.50
Old steel car axles.....	15.00 to 15.50
No. 1 railroad wrought.....	11.75 to 12.25
Wrought iron track scrap.....	10.50 to 11.00
No. 1 yard wrought, long.....	10.25 to 10.75
No. 1 yard wrought, short.....	9.25 to 9.75
Light iron.....	4.50 to 4.75
Cast borings, clean.....	6.00 to 6.25
Mixed borings and turnings.....	5.25 to 5.50
Wrought turnings.....	6.50 to 6.75
Wrought pipe.....	9.75 to 10.00
Old car wheels.....	11.00 to 11.50
No. 1 heavy cast, broken up.....	10.75 to 11.00
Stove plate.....	8.50 to 8.75
Locomotive grate bars.....	8.50 to 8.75
Malleable cast.....	10.00 to 10.50

**Cast Iron Pipe.**—The Quebec inquiry referred to in *The Iron Age* of November 9 is considerably larger

than mentioned at that time, being for 18,000 tons instead of 12,000 tons. It is almost entirely for 40-in., a small quantity being 44-in. Bids will be opened December 20. The Public Service Corporation, Newark, N. J., is in the market for 4800 tons of gas pipe; New Haven Gas Company, New Haven, Conn., 2150 tons; Scranton Gas & Water Company, Scranton, Pa., 1400 tons. The city of Lynn, Mass., will open bids on 425 tons of 4 to 16-in. water pipe December 14. That low prices have not entirely disappeared is shown by the purchase by Lowell, Mass., of a comparatively small quantity of 30-in. pipe at \$21.45 per net ton, delivered. Inquiries continue very good for pipe for spring delivery. Carload lots of 6-in. are quoted at \$22 to \$23 per net ton, tidewater.

**Ferroalloys.**—New York dealers quote 80 per cent. ferromanganese at \$38.50, Baltimore, and firm at that price. For 50 per cent. ferrosilicon \$70, delivered at buyers' works, is asked. Leading consumers in the market for 6000 to 8000 tons of ferrosilicon have not yet placed their orders.

## Metal Market

NEW YORK, December 13, 1911.

### The Week's Prices

#### Cents Per Pound for Early Delivery.

Dec.	Lake.	Electro-	Tin,	Lead		Spelter	
				New York.	St. Louis.	New York.	St. Louis.
7.....	13.37½	13.12½	45.10	4.45	4.37½	6.45	6.30
8.....	13.37½	13.25	45.00	4.45	4.37½	6.35	6.20
9.....	13.37½	13.23	....	4.45	4.37½	6.35	6.20
11.....	13.50	13.37½	43.95	4.45	4.37½	6.40	6.25
12.....	13.75	13.62½	43.95	4.45	4.37½	6.40	6.25
13.....	13.75	13.62½	44.35	4.45	4.37½	6.40	6.25

The demands in all metals are seasonable. Copper is firm at higher prices, largely because of the very favorable showing made by the November statement of the Copper Producers' Association. Tin shows a little weakness and spelter prices have declined sharply.

### New York

**Copper.**—The showing of the November statement of the Copper Producers' Association, issued December 8, is the cause of strength in the copper market both here and abroad. The figures show a reduction in unsold stocks to the smallest since February, 1910. It is now asserted that conditions indicate a sellers' market. Buying has not been excessively heavy in the domestic market, a better proportionate amount of business having been done with foreign consumers. Electrolytic copper is quoted to-day at 13.62½c., spot delivery. Lake is quoted at 13.75c. Spot copper is quoted in London at £60 16s. 3d., futures at £61 13s. 9d. The exports of copper to date this month have been 12,796 tons.

**Pig Tin.**—Pig tin was quiet until the end of last week, but since then has been a little more active, the buying being mostly for future delivery. The demands are seasonable, but transactions of last week represented a fair tonnage. In New York 44.35c. is quoted. London quotes spot tin at £200, futures at £191 10s. Arrivals of tin this month have been 1382 tons and the amount now reported afloat is 2215 tons.

**Tin Plates.**—The recent heavy demand for tin plates for next year's delivery has subsided to a considerable degree. More activity is looked for after the holidays. The New York price for 100 lb. coke plates is unchanged at \$3.64. Tin plates laid down at Swansea, Wales, are unchanged at 13s. 6d.

**Lead.**—The lead market is very quiet and devoid of special features. The belief prevails among dealers that the trade will hold steady at present prices. In New York 4.45c. is quoted and in St. Louis 4.37½c.

**Spelter.**—This metal is in very little demand, despite greatly reduced prices. The situation has been a cause of a wide divergence of opinion during the week. Ten days ago spelter was quoted near 7c. and much was said as to its reported scarcity and other causes which might justify a high price. A sudden break a week ago brought prices down with a rush and in some quarters manipulation is boldly charged. Prices have shown no tendency to revive to any great degree, probably due to very dull market conditions. New York dealers are quoting 6.40c. and in St. Louis 6.25c. is asked.

**Antimony.**—Dullness and inactivity characterize the situation. Cookson's is quoted at 7.75c. to 7.87½c., Hallett's at 7.60c. to 7.70c. and Hungarian and Chinese grades at 7c. to 7.12½c.

**Old Metals.**—The market is strong. Dealers' selling prices are as follows:

	Gents per lb.
Copper, heavy and crucible	12.75 to 13.00
Copper, heavy and wire	12.50 to 12.75
Copper, light and bottoms	11.50 to 11.75
Brass, heavy	9.00 to 9.25
Brass, light	7.00 to 7.25
Heavy machine composition	11.25 to 11.50
Clean brass turnings	8.25 to 8.50
Composition turnings	9.00 to 9.50
Lead, heavy	4.20
Lead, tea	3.95
Zinc, scrap	5.25

#### Chicago

DECEMBER 11.—In keeping with a stronger tone and the reduction in producers' stocks, copper has advanced  $\frac{1}{4}$ c. Tin and spelter showed recessions in value and zinc is off 25 cents per cask. We quote at Chicago as follows: Casting copper, 13.50c.; Lake, 13.75c., in carloads, for prompt shipment; small lots,  $\frac{1}{4}$ c. to 36c. higher; pig tin, carloads, 45c.; small lots, 48c.; lead, desilverized, 4.40c. to 4.45c. for 50-ton lots; corrugating, 4.55c. to 4.60c. for 50-ton lots; in carloads, 2½c. per 100 lb. higher; spelter, 6.30c.; Gookson's antimony, 8.75c.; and other grades, 7.75c. to 8.25c., in small lots; sheet zinc is \$8.25, f.o.b. La Salle or Peru, Ill., less 8 per cent. discount, in carloads of 600-lb. casks. On old metals we quote buying prices for less than carload lots: Copper wire, crucible shapes, 11c.; copper bottoms, 9.75c.; copper clips, 10.75c.; red brass, 10c.; yellow brass, 7.75c.; lead pipe, 4c.; zinc, 4.50c.; pewter, No. 1, 26c.; tinfoil, 33c.; block tin pipe, 38c.

#### St. Louis

DECEMBER 11.—Spelter is now quotable at 6.10c. Lead is firm at 4.37½c. to 4.40c. Tin is held at 45.35c. Lake copper is quoted at 13.60c. and electrolytic at 13.47½c. Antimony stands at 8.10c. In the Joplin mining district, responding to the decline in spelter, offerings of zinc blende in the open market were off \$1, the top basis for lots carrying 60 per cent. metallic zinc being \$47 per ton, ranging down to \$42. Choice grades commanded as high as \$50 per ton. Ores selling on contract, based on the average of the preceding week's daily quotations on spelter, brought \$52.46 per ton, assay basis of 60 per cent. metallic zinc, with the choicer lots going as high as \$55.50. The sharp demand during the week for lead ore pushed the price up to \$64 per ton, which was \$1 higher than the previous record for the year. The heavy buying of the St. Louis Smelting & Refining Company caused the advance. Calamine continued in good demand at \$24 to \$26, basis of 40 per cent. metallic zinc, with a top price of \$32. On old metals we quote: Light brass, 4.50c.; heavy brass and light copper, 8.50c.; heavy copper and copper wire, 9.50c.; zinc, 3.50c.; lead, 3.50c.; pewter, 20c.; tin foil, 29c.; tea lead, 3c.

#### The DeBats Crucible Steel Company

The DeBats Crucible Steel Company, which built a plant for experimental purposes at Zelienople, Pa., to try out a new process of steel making, has secured financial backing and has purchased five acres of ground at Tylerville, a suburb of Washington, Pa., where it will build a new plant. The company has a Pennsylvania charter, with a capital stock of \$125,000, and will ask bids in a short time on the buildings and equipment. N. A. Vandervort, Oliver Building, Pittsburgh, is preparing the plans. The main building will be 60 x 100 ft., and another 40 x 60 ft., both of steel construction, while a smaller building will contain a converter and cupola. Two steam hammers and other equipment will be required. Two annealing furnaces and two tempering pits will be erected. The company will manufacture tool steel and small steel castings. It is expected that the plant will be ready for operation about March 1. Louis DeBats is president, A. G. Zehner vice-president, Charles Snyder secretary, and W. C. Hagan treasurer.

The United States Supreme Court December 11 upheld the federal eight hour law as applied to levee work on the Mississippi River. The defendant, a government contractor, was prosecuted for working employees more than eight hours in violation of the statute. He defended on the ground that the work was of an extraordinary character amounting to emergency work. The court holds that the only cases exempted from the statute are those arising from "accidental or uncommon causes."

#### Iron and Industrial Stocks

NEW YORK, December 13, 1911.

For a portion of the week under review depressing influences prevailed, such as the announcement of an impending reorganization of the Allis-Chalmers Company, the financial difficulties of the Wabash Railroad and other occurrences which were somewhat disquieting. Their effect was but temporary, and the continued reports of improving general business, favorable court decisions on railroad cases and other encouraging developments caused a decided upward movement in securities. Great Northern Ore certificates, however, declined steadily because of the expectation that earnings from the Hill ore properties will shrink decidedly with the termination of the lease to the United States Steel Corporation. The range of prices on active iron and industrial stocks from Wednesday of last week to Tuesday of this week was as follows:

Allis-Chalm., com...	13 $\frac{1}{2}$	24	Railway Spring, pref...	98 $\frac{1}{2}$
Allis-Chalm., pref...	7	10 $\frac{1}{2}$	Republic, com...	22 $\frac{1}{2}$
Beth. Steel, com...	29		Republic, pref...	81
Beth. Steel, pref...	58	58 $\frac{1}{4}$	Sloss, com...	39
Can, com...	10 $\frac{1}{2}$	11 $\frac{1}{2}$	Pipe, com...	15
Can, pref...	90	92 $\frac{1}{2}$	Pipe, pref...	48
Car & Fdry., com...	52	54 $\frac{1}{2}$	U. S. Steel, com...	60 $\frac{1}{2}$
Car & Fdry., pref...	116 $\frac{1}{2}$	117	U. S. Steel, pref...	108 $\frac{1}{2}$
Colorado Fuel...	25 $\frac{1}{2}$	28	Westinghouse Elec...	64
General Electric...	151 $\frac{1}{2}$	154	Va. I. C. & C...	70
Gr. N. Ore Cert...	34	42	Am. Ship, com...	40 $\frac{1}{2}$
Int. Harv., com...	104 $\frac{1}{2}$	107	Chic. Pneu. Tool...	45 $\frac{1}{2}$
Int. Pump, com...	32	34 $\frac{1}{2}$	Cambric Steel...	43 $\frac{1}{2}$
Int. Pump, pref...	83 $\frac{1}{2}$		Lake Sup. Corp...	26
Locomotive, com...	32	37	Pa. Steel, pref...	102 $\frac{1}{2}$
Locomotive, pref...		102 $\frac{1}{2}$	Warwick...	10 $\frac{1}{2}$
Nat. En. & St., com...	14	14 $\frac{1}{2}$	Crucible Steel, com...	11 $\frac{1}{2}$
Nat. En. & St., pref...	96		Crucible Steel, pref...	81 $\frac{1}{2}$
Pressed Steel, com...	32	33	Harb. Wk. Ref., com...	40
Pressed Steel, pref...	100		Harb. Wk. Ref., pref...	99
Railway Spring, com...	31	31 $\frac{1}{2}$		

#### Dividends Declared

The International Harvester Company, regular quarterly, 1 $\frac{1}{4}$  per cent. on the common stock, payable January 15.

The American Can Company, regular quarterly, 1 $\frac{1}{4}$  per cent. on the preferred stock, payable January 2.

The La Belle Iron Works, regular quarterly, 2 $\frac{1}{2}$  per cent., payable December 31.

The Canadian Westinghouse Company, Ltd., regular quarterly, 1 $\frac{1}{2}$  per cent. and an extra dividend of 1 per cent., payable January 10.

The Underwood Typewriter Company, regular quarterly, 1 $\frac{1}{4}$  per cent. on the preferred stock and 1 per cent. on the common stock, payable January 1.

The McCrum-Howell Company, regular quarterly,  $\frac{3}{4}$  of 1 per cent. on the common stock, payable January 1.

The American Brake Shoe & Foundry Company, regular quarterly, 1 $\frac{1}{4}$  per cent. on the preferred and 1 $\frac{1}{4}$  per cent. on the common stock, payable December 30.

The Sloss-Sheffield Steel & Iron Company, regular quarterly, 1 $\frac{1}{4}$  per cent. on the preferred stock, payable January 2.

#### Increased Operations at Aliquippa

Owing to the increase in new business and the better outlook for the future, the Jones & Laughlin Steel Company, Pittsburgh, has decided to start up more departments of its plant at Aliquippa, Pa. The work actually finished at Aliquippa embraces four blast furnaces, four Talbot open-hearth furnaces, blooming and billet mill, rod, wire and wire nail mills and two units of 12 hot mills each in the tin plate departments. For some months the company has been operating the first unit of its tin plate mills, one rod mill and the wire and wire nail mills. The second rod mill was started up November 1 and it is the intention of the company to put in operation as soon as possible the second unit of tin plate mills, making 24 in all that will be running, also the four open-hearth furnaces and the blooming and billet mills, which will roll down sheet bars for the tin plate mill and billets for the rod mill.

It will have in operation soon after January 1 four Talbot open-hearth furnaces, with an output of about 1000 tons of steel a day; the blooming and billet mill and double rod mills, built by the Morgan Construction Company, with a capacity of about 800 tons a day; 24 tin plate mills, and the wire and wire nail mills. This will mean the employment of a large force of men, and conditions at Aliquippa will be much more active after the first of the year than at any time since the company built this plant.

**Personal**

William H. McIntyre has been elected vice-president and general manager of Manning, Maxwell & Moore, Inc., New York. Following Mr. McIntyre's election to his new office, November 24, a conference was held of branch managers and field men of the company for the purpose of permitting them to meet Mr. McIntyre and for the discussion of business activities of 1912. The meeting was notable for the enthusiasm displayed by the representatives of the company and the unanimous expressions of confidence in its future under the management of Mr. McIntyre. The new vice-president and general manager comes to the machinery field from the insurance world. After leaving the New York public schools Mr. McIntyre entered the employ of the Equitable Life Assurance Society and rose to become fourth vice-president, which office he resigned to take his present position.

The Republic Iron & Steel Company, Youngstown, Ohio, announces changes among officials as follows: J. E. Perry, formerly secretary to President T. J. Bray, has been appointed assistant to president and will have charge of the coal and coke properties of the Northern district. Frank C. Cunningham, formerly superintendent of the finishing mills at Haselton, Ohio, has been made superintendent of the Brown-Bonnell mills, succeeding Harry Parrock, who becomes a city official January 1. H. J. Steinbecker, superintendent of the Mahoning Valley plant, succeeds Mr. Cunningham and Oscar Black, formerly assistant superintendent of the same plant, succeeds Mr. Steinbecker.

C. A. Hamilton, who for the past six years has been vice-president and general manager of the Wisconsin Engine Company, Gorliss, Wis., has resigned his position to take an interest in the Lavigne Gear Company, a new corporation organized for the purpose of manufacturing automobile steering gears and accessories. Mr. Hamilton has been elected vice-president and general manager of this company, with general offices at Milwaukee, Wis.

The Adams Bagnell Electric Company, Cleveland, Ohio, has made the following changes in its sales department: J. G. Pomeroy, former Western sales manager, has been made sales manager with headquarters in Cleveland. C. L. Eshleman has been appointed publicity manager, with headquarters in Cleveland. The company has opened an office in Boston in charge of E. R. Bryant, who has been connected with the New York office.

William Breeden has been appointed Philadelphia district sales agent for the Lackawanna Steel Company and will open an office at 501 Morris Building, Philadelphia, Pa., January 1. His district will comprise that part of Pennsylvania lying east of Altoona, with Maryland, Delaware and that part of New Jersey south of but including Trenton. Mr. Breeden for the past four years has been connected with the Philadelphia office of the Carnegie Steel Company, and previous to that was for eight years in its general offices at Pittsburgh.

Theodore Geissmann & Co., direct mill representatives in iron, steel and wire, Commercial National Bank Building, Chicago, announce that the vacancies created in their selling organization, mentioned in a previous issue, are being competently filled by Joseph W. Thurston, formerly with the Bethlehem Steel Company, and G. Elton Studebaker, for years with Joseph T. Ryerson & Son, both of whom are thoroughly capable steel salesmen.

Homer A. Wessel, 13 East Second street, Cincinnati, Ohio, has been appointed Central Western agent for William Jessop & Sons, Ltd., Sheffield, England, and the Jessop Steel Company, Washington, Pa., manufacturers of crucible steels.

Sydney Jessop Robinson, president William Jessop & Sons, Ltd., Sheffield, England, who has been in America for some time on business, will return to England December 16 on the Mauretania.

H. Kleinhans, formerly with the American Locomotive Company, New York City, has engaged in business for himself as a dealer in railroad and contractors' equipment, engines, electrical machinery, etc. Besides his office at 415 Oliver Building, Pittsburgh, a branch office is maintained at 428 East Twenty-third street, New York.

Anton Getz, formerly with the engineering department of the Indiana Steel Company, is now general superintendent of the Pittsburgh Emery Wheel Company, Pittsburgh, with plant at Rochester, Pa.

The Empire Iron & Steel Company, Niles, Ohio, announces that J. D. Waddell has resigned as treasurer and manager of sales, effective December 1. He will be succeeded as manager of sales by J. Charles Wicks, and his successor as treasurer will be elected at the annual meeting of the board of directors in January.

H. M. Moore, who had charge of the Cincinnati Punch & Shear Company's office and later engaged with that company's successor, the Tronton Punch & Shear Company, Ironton, Ohio, has severed his connection with the company.

F. E. Bachman has resigned as general manager of the Northern Iron Company, operating furnaces at Port Henry, N. Y., and Standish, N. Y., the position he has occupied since the formation of the company in 1902.

J. A. Schloss, who is connected with L. Vogelstein & Co., 42 Broadway, New York, has just returned from a business trip to Mexico.

C. H. Halcomb has been made vice-president and general manager of the Swedish Iron & Steel Corporation, 12 Platt street, New York. He has had a long experience in the steel trade, having been president successively of the Sanderson Steel Company, Crucible Steel Company of America and Halcomb Steel Company.

H. A. Severson, manager of the Barber-Colman Company, Rockford, Ill., sailed for Europe December 9. He will be absent until the latter part of January.

Charles F. Barth, whose resignation as manager of the West Allis works of the Allis-Chalmers Company, Milwaukee, Wis., became effective December 1, was the guest of honor at a dinner given by 150 of his associates at the Allis-Chalmers clubhouse.

Peter Donaldson, of James Watson & Co., Glasgow, Scotland, sailed from New York December 13 after a stay of several weeks in this country.

**The National Gas Engine Association**

At the annual convention of the gas and gasoline engine men held at the Hollenden Hotel, Cleveland, Ohio, December 5 to 8, it was decided to change the name of their association from the National Gas and Gasoline Engine Trades Association to the National Gas Engine Association. Milwaukee, Wis., was chosen as the next meeting place. A plan for holding a national gas engine exhibition in the Coliseum in that city next June, when the convention is in session, was discussed but no action was taken.

Among the matters discussed were the hiring of a paid secretary, increasing the annual dues and engaging in a general publicity campaign. These were all referred to the Executive Committee. C. O. Hamilton, Elyria, Ohio; H. W. Bolens, Port Washington, Wis., and O. B. Iles, Indianapolis, were elected to the Executive Committee, composed of nine members, the first two being re-elected. The Executive Committee elected the following officers: President, O. C. Parker, Racine, Wis.; vice-president, H. W. Jones, Chicago; secretary, Albert Strittmatter, Cincinnati, Ohio; treasurer, Otto M. Knoblock, South Bend, Ind.

**High Grade Small Tools in Demand.**—The Irvington Mfg. Company, Irvington, N. J., manufacturer of Red Devil tools, comprising pliers, nippers, etc., has completed a large extension to its drop forging plant and hardening room and contemplates another addition. The company reports its business as very good; in fact, better than might have been expected under existing conditions. Since its connection with the Smith & Hemenway Company, 150-152 Chambers street, New York, the Irvington Company's business has grown automatically. A gratifying fact in this connection is that the tools insisted upon by the New York house are of such a high class line that they show conclusively that room was to be found at the top for high grade tools.

# The Mechanical Engineers Convention

Thirty-Second Annual Meeting, New York, December 5 to 8, 1911

The differentiation taking place in the development of recognized branches of mechanical engineering was emphasized at the annual gathering of the American Society of Mechanical Engineers in New York last week, as was also the need and plans to continue integration of the varied interests so they may come under the influence of the society and profit by its capacity to further progress. Probably the most important thought engendered by the meeting related to the potential ability of the mechanical engineer to prevent strained relations between capital and labor, to improve efficiency of production and generally to relieve the social unrest experienced throughout the country. It is interesting that this thought emanated from both the retiring president, Col. E. D. Meier, and the incoming president, Dr. Alex. C. Humphreys, and the reader is respectfully urged to read the important extracts from Colonel Meier's address, printed on page 1219 of last week's issue.

The humanitarian aspect of mechanical engineering to industrial life as well as professional service to fellow engineers were conspicuous at the meeting in the Engineering Societies Building, New York, last week, of the American Society of Mechanical Engineers. What may be accomplished for the well-being of the general public is referred to in the heading to this account. The mechanical engineering of the textile industry, the mechanical engineering of the cement industry and the problems of the oil and gas engine came in for special consideration at three separate sessions. The special attention given to these divergent lines is an illustration of the effort to deal, as the opportunity offers, with the detail problems which up to the moment have not been well taken care of in a broad way. Committees on definite subjects, it will be recalled, are appointed as may be expedient and through their activities, as in the cases of the committees on textiles and cement manufacture at the present meeting, data and experiences are massed for consideration at future meetings.

In the following report it is intended to touch on some of the high spots of last week's convention. Members in contributing to the discussions have in increasing numbers developed the habit of preparing written comments. They are often so voluminous in the aggregate that they are merely acknowledged without reading, being left for publication in the Society's monthly journal. As has been the practice of *The Iron Age*, these will be reviewed as issued when containing information which it is thought will be of interest to its readers, so that the data may be obtained, if desired, at first hand from the Society. The leading points covered are, however, here given.

In last week's issue were mentioned the incidents of the reunion of Tuesday evening, December 5. Wednesday morning was given over largely to a business session; there were two simultaneous professional sessions on both Wednesday afternoon and Thursday morning; Thursday afternoon was left open to visit the Steamship Olympic of the White Star Line; Thursday evening witnessed the leading social function of the meeting, the reception and dance at the Hotel Astor; the concluding professional session occurred Friday morning, and a number of excursions, including the Edison laboratory at Orange, N. J., the Brooklyn Navy Yard, the Bush Terminal Company, Brooklyn, the E. W. Bliss plant in Brooklyn and the Ward bread-making factory in Brooklyn, were arranged for Friday afternoon.

## Financing New York Entertainments

In the business session was announced an unusually large class of accessions to membership, and the report of the Council then given showed that the Society is enjoying a happy financial status, briefly expressed by stating that it has total assets of about \$750,000 and an outstanding indebtedness of about \$81,000 held in 4 per cent. bonds by its own members. The mortgage on the Society's portion of the land occupied by the Engineering Societies Building has been liquidated. A large amount of time was taken up with discussing ways and means of financing the entertainment of the New York meetings. A constitutional amendment had been proposed requiring increased dues to the amount of \$3 annually from members of New York and vicinity, but this was amended by a substitute which takes

away the compulsory payment provision and leaves the raising of funds about the way it now stands. The amended amendment will be voted on by mail in the usual way as a matter of record against a recurrence of the agitation. It may be said that it was felt wrong to write into the constitution anything of a local character.

## A Turret Equatorial Telescope

The first paper read before the meeting was presented Wednesday morning by James Hartness, president Jones & Lamson Machine Company, Springfield, Vt. It described a new type of astronomical observatory which was designed to protect the observer from the cold to which he is exposed in most of the observatories now in use. It accomplishes this purpose by the use of a revolving turret. It has been possible to avoid the use of the large reflecting mirrors. The paper touched on the delicate subject of patent rights for scientific instruments and the adverse effect to science of the present policy of allowing such things to go unprotected by patent rights.

Mr. Hartness was highly commended for the courage he had shown in applying the turret principle to apparatus which must work as accurately as the telescope. Dr. F. R. Hutton dwelt particularly on the mechanical achievement of the use of a large diameter of revolving mechanism of considerable weight with but a short length for controlling the articulation involved in driving and revolving the turret. He injected a note of humor into the discussion by suggesting the use of an electrically warmed coat for the unfortunate astronomer who does not enjoy the warm observatory of the author's design. Dr. Hutton led his listeners to believe that no other covering than the electric coat might be necessary, and mentioned that it should be kept at about 98 deg. or body temperature. From this suggestion *The Iron Age* must dissent, as the air envelope immediately surrounding the human body must be sufficiently lower than body temperature to allow for the proper dissipation of heat or otherwise cause discomfort owing to the heat of the human engine not getting proper escape.

## Ethics of Patents on Scientific Instruments

Mr. Hartness's attitude on the patenting of scientific instruments was highly approved by Prof. William Kent. It was in brief as follows: Machinery cannot be successfully and economically built without the concentration of the energies of a number of men for a given purpose, and this cannot be accomplished without patent protection. It has been thought best to apply for patents on the new features of the turret telescope. Although this will be done without dedicating it outright to the public, it is needless to say that no barrier will be allowed to prevent these instruments being built by any one until some business arrangement is made for the exclusive manufacture of some one size by some builder, and even then, others may be permitted to build other sizes; but all such permission will be given only by letter and not in a broadcast way that would in any way handicap the main purpose of making these machines available at a low cost to anyone who may desire them. It goes without saying that with patents there is always the thought of the exclusive right and profit of the patentee and manufacturer, but regarding this point it is well known that the low cost of such things, as well as the

best workmanship and results, can be obtained only by concentrating all of the work in one plant. The writer does not contemplate manufacturing these instruments. More may be built experimentally, but not for the market. If others wish to build instruments of this kind, permission will doubtless be freely given, but with certain restrictions; but all this must be arranged in each case by correspondence. If patent is granted no charge of any kind will be made for license to build until some arrangement has been made for manufacture on an efficient scale, and then only such restrictions as in the opinion of the patentee will be for the best interests of the science.

#### The Expense Burden in Manufacturing Costs

A paper on the distribution of the expense burden in manufacturing was contributed by Sterling H. Bunnell of New York. It is the intention to review it at length in these columns. The author's object was to outline a rational method of distributing expense burden to stabilize the cost of product against the effect of temporary changes in the expense schedule, while providing a definite standard of running expense as a measure of the efficiency of the supervising department.

#### Standard Cross Sections for Drawings

A brief paper was presented by Prof. H. deB. Parsons of New York offering a set of cross-section linings for drawings to indicate graphically the materials covered by the drawings. His suggestion was that the Society issue uniform cards covering not only the subject taken up by Professor Parsons himself, but those of other committees like that on flange proportions. Then such uniform cards could be framed or otherwise used in the drafting room. The question was referred to the Council to decide whether it would not be wise or feasible to issue such cards.

#### Tests of Large Boilers at Detroit

The first paper of the general session of Wednesday afternoon held simultaneously with the cement session was that of Prof. D. S. Jacobus, advisory engineer of the Babcock & Wilcox Company, describing tests made on two boilers at the plant of the Detroit Edison Company. Each of the boilers has a rated capacity of 2365 hp. on the basis of 10 sq. ft. of boiler heating surface per horsepower, and in every day practice carry a load of 6000 kw. and in the evening from 7000 to 8000 kw. The preliminary and regular tests required that the boiler room of a large power house be under the control of the observers for three months and for six weeks over 50 men worked in 8-hour shifts night and day, exclusively on the tests. The magnitude of the undertaking may be appreciated when attention is drawn to the total quantities measured, which aggregated about 5000 tons of coal weighed and 45,000 tons of water. One of the boilers tested was fitted with Roney stokers and the other with Taylor stokers. The test results secured indicated that the efficiency obtainable with each stoker is about the same. The combined efficiency of the boiler and furnace varied from about 80 per cent. at slightly below rating to about 76 per cent. at double rating, on the basis of 10 sq. ft. of boiler heating surface per rated horsepower. The steam used for driving the stokers and for producing the forced blast in the Taylor stokers was not deducted from the total steam generated by the boiler.

An active discussion followed the presentation of Prof. Jacobus' paper. R. H. Rice, of the General Electric Company, expressed his belief that the large boiler is a step in the right direction and gives credit to E. D. Leavitt as the first to recognize the fact. The advantages of the large boiler lay in part in the reduced cost of operation. He took the opportunity to emphasize the absurdity of the unit "boiler horsepower," believing in referring to boiler capacity in units of 1000 lb. of steam. He felt there was a field for invention in the matter of a graduated feeding of water and suggested the desirability of having means for introducing cold feed water in the event of an accident to the boiler when the escape of a large volume of steam is imminent.

Among others who discussed the paper were R. D. De Wolf, of the Rochester Railway & Light Company, who showed a number of curves he had deduced from the data of the test, one indicating that the loss of pressure in the superheater is different in two identical boilers and Prof.

W. D. Ennis, who mentioned that the plant was producing a kilowatt-hour for 1.9 lb. of coal. He accounted for the good boiler performance largely on the reduced radiation loss because of the size of the boiler in comparison with the outside surfaces. Prof. William Kent and Prof. R. C. Carpenter both commented very favorably on the tests, the former stating that they showed the highest values for high and low rates of firing with coal having over 25 per cent. volatile matter. Prof. Carpenter regarded the test as the most perfect in completeness that has yet appeared before any society and considered that the good results were attributable in part to the way the furnace was handled and to the use of good coal and the close control of the air supplied. J. C. Parker, general manager Parker Boiler Company, Philadelphia, was inclined to take the results with some caution, referring to the tables to show the possibilities of errors in the sampling of the coal. As regards the double end setting of boilers he mentioned that W. S. Twinning had so installed them about eight years ago in connection with the Philadelphia traction power station. He compared the Jacobus tests with tests made by H. G. Stott on large boiler units indicating that with the same rate of firing the boilers tested by Mr. Stott would have to give over 40 per cent. more steam to show the same steaming rate.

Mr. Stott, in entering the discussion, commented on the elaborateness of the tests and the high reputation for the author of the paper and also his ability to get high results, or, as Mr. Stott informally remarked, to get results about 5 per cent. higher than anybody else has been able to. He said that very large furnaces are not to be used as a panacea of combustion troubles. The height of the combustion space depended on a knowledge of the kind of coal to be used; that there is no universal furnace for coal. He expressed particular pleasure at Prof. Jacobus' announcement that he is working on a boiler along the lines explained in the conclusion of his paper, giving a high percentage of efficiency from a range of about 80 per cent. of ordinary rating to even four times this rating. Prof. Jacobus showed a chart, intimating that the boiler must take in the features of the Detroit construction for the lower range of operation and of the marine boiler for the high loads. Mr. Stott emphasized that the value of such a boiler comes from the fact that at low loads the fixed charges on the boiler plant are sometimes two and three times the operating charges and that a boiler can be operated at 200 and 300 per cent. overload with satisfactory efficiency. A boiler plant should not have to include a unit left for hours at a time under banked fires.

#### Strain Measurements of Boilers Under Pressure

Hydrostatic tests made upon two horizontal tubular boilers which had been in service for a period of 27 years were described in a paper read Wednesday afternoon by James E. Howard, engineer-physicist of the Bureau of Standards, Washington, D. C. It is intended to review this later in these columns as space allows. Gaged lengths were established on different parts of the boilers by means of holes 10 in. apart and about 0.05 in. in diameter, reamed to a conical shape. The deformations of the boilers at different pressures were determined by a 10-in. micrometer strain gage with conical points to fit the reamed holes laid out on the boilers.

#### Wuest System of Herringbone Gears

A paper on herringbone gears with special reference to the Wuest system was presented Wednesday afternoon by Percy C. Day, engineer with the Falk Company, Milwaukee, Wis. It brought out the opinion that the herringbone gear has its own field, as it was expressed by Luther D. Burlingame, of the Brown & Sharpe Mfg. Company, Providence, that the earlier disfavor in which such gearing was held was due to noise of operation and should not now be maintained. It was explained that they can be economically cut by the hobbing process, and that the offsetting in the gear design had reduced the cost of manufacture. F. E. Rogers, of Machinery, reported that he had seen the hobbing process applied to a 9-ft. gear, which was completed in 20 hr.

#### Equipment and Management of the Core Room

A most elaborate paper opened the Thursday morning general session. It was contributed by Henry M. Lane and discussed the equipment and management of the core-

room. It is hoped to devote some space in these pages to some of its features, but the paper in full was printed in the Society's Journal for October and may be purchased in this shape on application to the Society. H. L. Gantt, who occupied the chair during the session, commended the paper highly and there was an active discussion with a considerable number of written contributions which had to be briefly referred to with the intimation that the points brought out would be printed in the Society's Journal. Alexander E. Outerbridge, Jr., referred to his method of having a standard sand and oil for comparing purchased material for use in the foundry and also referred to the fluorescent test for the adulteration of linseed and similar oils by mineral oils, this discovery by Mr. Outerbridge of testing for fluorescence having already been described at length in these columns. Thomas D. West dwelt on the importance of grinding sand. Among others who contributed to the discussion were Benjamin E. Fuller, who thought that grinding sand by means of hand manipulation of a pipe as described by the author was all right for small amounts, but for large amounts of sand, mixing as with paddles was the better way. E. H. Mumford paid a tribute to Mr. Lane's paper and showed two views of a jolt rammer for making cores, mounted on a concrete base which itself was intended for transporting as needed about the coremaking room. It was capable, he said, of making cores of 350 to 380 lb. in weight and emphasized the value of the jolt ramming method to get the highest degree of smoothness in the inside of a casting, now particularly important in the automobile industry.

#### Tests of a Sand-Blasting Machine

Prof. Wm. T. Magruder, of the Ohio State University, Columbus, Ohio, contributed a paper giving the records and results of quantitative tests of a sand-blasting machine under the actual conditions of commercial practice. The rough surfaces of pieces of cast iron, which had been cast in one mold, were blasted by air, from which the moisture had been separated, with dried and screened new Cape May grit by a Pangborn sand-blasting machine, and with the sand valve wide open. The quantity of air used was measured by a pitometer; the quantities of iron removed, of sand used, and of sand consumed, were measured for each test. The air pressure was varied from 20 lb. to 70 lb. The angle between the surface of the test bar and the nozzle was varied from 30 to 90 deg. The distance from the nozzle to the test bar was varied from 4 to 10 in. The results show that (a) for distance of 8 in. and angle of 45 deg., the equivalent amount of free air delivered per minute, the iron removed, the sand discharged, the sand used up, per 100 cu. ft. of free air flowing per minute, vary directly with the pressure; the amount of usable sand remaining and the amount of sand discharged per pound of iron removed vary inversely with the pressure; (b) for 60-lb. pressure and 8-in. distance, the largest amount of iron was removed and the least amount of sand was required to do it, when the angle between the nozzle and the work was from 45 to 60 deg.; (c) for 60-lb. pressure and 45-deg. between the nozzle and the work, the largest amount of iron was removed and the least amount of sand was required to do it, when the distance was 6 in.; (d) the sand used varies with the directness of the blast, and (e) inversely with the distance from the test bar.

Part of the discussion regarding sand-blasting machines related to the pressure required for the air supplied. On one side of the question were those who felt that 15, 20 or 30-lb. pressure was sufficient and that what was desired was a large volume of air. The other side held that the sand-blasting operation was not a scouring action but a hammering action. That being the case, it was necessary to depend on the kinetic energy of the impinging sand. Therefore, sand with the largest individual grains would give the most effective hammer blows. It was admitted that as regards the distance the nozzle is held from the casting and the angle which it makes with the casting, there is great room for variation and the process depends largely on the operator. It was felt that the value of the angle lay in the fact that there would be minimum interference with the rebounding particles of sand, and it was agreed that casting should be so located, or so positioned, that the used sand would readily flow away. One advocate of pressure no higher than necessary to clean referred to the success in the bath-tub industry, which was the first to

take hold of sand-blasting apparatus. With a pressure of 15 to 25 lb. and nozzles of  $\frac{5}{8}$  to 1 in. diameter, 65 sq. ft. of surface, both the inside and the outside of the bathtub, is cleaned in less than 1 hr. time. In answer to the claim that relatively large sand grains were desirable, it was held by another speaker that fine sand has good cutting effect. Another argument against the high pressure was that the sand blasting should not cut the casting and the existence of the high-pressure apparatus meant the presence of an engine of potential destruction. A number of suggestions for further information were made and the author offered to reply at length through the Journal.

A paper by Amasa Trowbridge, factory manager of the Veeder Mfg. Company, Hartford, Conn., on die castings and a joint paper by George H. Barrus, Boston, and Charles M. Manly, vice-president of the Manly Drive Company, New York, covering tests of a hydraulic variable-speed power transmission were also presented Thursday morning. The Manly apparatus, which was described in principle some time ago in these columns, was exhibited with its testing rig, including an absorption dynamometer of unusual construction capable of withstanding severe shocks.

#### Electric Machine Driving

The textile session held Friday morning was centered in a paper by Frank W. Reynolds, of Lockwood, Greene & Co., Boston, and in two papers on air conditioning. A considerable discussion on the power problems of the textile mill was precipitated by Mr. Reynolds' paper. Several features relating to structure and equipment were also brought out. For example, C. T. Main of Boston mentioned that as large window glass surface could be obtained in brick buildings as with concrete, mentioning a case of his own where the glass surface was 56 per cent. and another as much as 63 per cent. of the total wall area, which area could be increased to 80 per cent. if the window sills were lowered. He had encountered difficulties with water collecting on the second floor of a concrete building and waterproofing of floors was a necessity sometimes overlooked. He outlined a large number of questions of mill construction which needed solution, including the heating and ventilation of dye houses with the attendant fog from the dye kettles and collection of moisture on the ceiling. Mr. Arthur Herschmann contributed to objections made to concrete floors by his experience of the softening of concrete work especially of the foundations of machines from oil.

Charles F. Scott, of the Westinghouse Electric & Mfg. Company, discussed at some length the advantages of electric driving. His observation has shown that with an engine drive the speed late in the day is 2 to 3 per cent. less than that at the beginning of the day, due to such conditions as the softening of the belts and increase in their slippage. As a mill is intended to turn out so much of a specific product, he felt that the power question itself is likely to be foreign to the main problems of the mill, but as power has itself attained to the dignity of an independent industry and needs experts, it is better to consider purchase of electric power from a central source rather than each mill provide its own power plant and experts.

With regard to the individual motor drive as compared with group driving, he mentioned a hypothetical case in which one 50-hp. motor might do the work of 130 individual motors. The one motor would cost less than \$500, while the 130 would total about \$8,000. When, however, the cost of shafting and belting is taken into consideration the total cost comes about the same with the disadvantage that there is power lost in shafting. He emphasized that the power cost itself is only a few per cent. of the cost of the product and that, after all, it is quality and not cost that is the deciding point, and the quality of the electric drive rests in the constancy of speed, reliability and the like. Mention was also made of the fact that better attention is usually given to electric driving, while almost anybody is allowed to adjust belts and generally take care of a belt transmission system.

J. I. Lyle, of the Carrier Air Conditioning Company, called attention to the fact that large glass window areas are not serious as transmitters of heat to the outside atmosphere, for the reason that in mills such as the textile mill there is a very considerable amount of heat given off by the machinery. He took the opportunity to mention two

mills identical in size, location, manner of driving and product, one having conditioned air and cooled 12 to 15 deg. below the temperature of the other mill. The mill with the conditioned air was found capable of handling second-grade material with satisfactory results, both in quality of product and cost of operation.

George M. Brill of Chicago explained that in an application of motor driving to the Studebaker wagon and carriage works, the use of the motors increased the output of the work without the workman hardly apprehending it. He felt that there was another advantage not mentioned with regard to the electric drive and that is there is no great momentum stored up and that a given section of electrically driven machinery may be relatively quickly shut down. There is also with the absence of belting less tendency for stirring up dust.

#### Air Conditioning

The subject of air conditioning came in for two papers on Friday morning. These covered humidity tables, the theory of the warming of air on passing over heated surfaces and apparatus available for the so-called conditioning process. One was contributed by Willis H. Carrier, of the Carrier Air Conditioning Company, and was particularly important in submitting a new psychrometric chart of high utility to those having problems in humidity to solve. The other was contributed under the joint authorship of Mr. Carrier and Frank L. Busey and treated of the construction, application and operation of apparatus used in the artificial production and control of atmospheric conditions as applied in various processes of manufacture and in heating and ventilation. The rate of heat transmission in indirect surface air heaters and coolers was considered and a new theory of heat convection under forced circulation developed and established by experiment. A rational formula for calculating the rate of heat transfer and temperature rise at various air velocities and temperature differences was given in conformance with these experimental data.

#### Conveying Coal by an Air Blast

Frank H. Kneeland, of the United States Coal & Coke Company, Gary, W. Va., presented a paper relating to the use of the Pitot tube for the measurement of flow of large volumes of air. The tests were made largely in connection with the flow of air through an experimental pipe line erected for the study of the problem of conveying coal by means of an air blast. Other tests were made in mine headings and in measuring the discharge from fan chimneys. The author stated that the use of air currents for carrying away coal had resulted in his company being able to run a heading in a coal mine for a distance of 300 ft. in 10 hr., the heading measuring 10 ft. in height and 7 ft. in width. He said that 200 ft. in the 10 hr. was not at all uncommon.

#### Gas Power Section

A session of the Gas Power Section of the Society was held on Thursday morning, Chairman R. H. Fernald presiding. He briefly reviewed what progress had been made during the past year in the field of gas power work along the lines of increasing the size of gas and Diesel oil engines and the use of tar as fuel in oil engines of that type, the utilization of the waste heat of gas engines for heating buildings, the use of internal combustion locomotives, the attempt made to generate producer gas from low-grade fuels and illuminating gas from sewage as well as the progress made in the design of small power gas producers for bituminous coal and the crude oil producer. Mention was also made of the discovery of flameless incandescent surface combustion made by Prof. William A. Bone, a description of which appeared in *The Iron Age*, December 7, 1911.

Prof. W. D. Ennis presented the report of the committee on the election of officers, which announced the election of H. J. K. Freyn as chairman for the ensuing year and Irving E. Moulthrop as a member of the executive committee for five years and Max Rotter and H. F. Smith as members of the same committee for one year.

#### OIL ENGINES

A paper was presented by H. R. Setz, Warren, Pa., dealing with Diesel engine and its modifications which are

commonly known under the collective name of constant-pressure engines. Charts were exhibited showing that for the ordinary operating conditions, viz., 3000 hr. per year, the Diesel engine was better than either the low-pressure oil type or the gas-producer plant, but could not compete with the natural gas engine.

#### TEST OF AN 85 H.P. OIL ENGINE

Two tests of a type F H De La Vergne oil engine were described in a paper by Forrest M. Towle, New York City. In one of the tests the engine drove an oil pump and in the other the load was applied by a prony brake instead of a pump. The efficiency of the pump and the transmission gears was 92.1 per cent., the total station efficiency 25.52 per cent., and the duty per 1,000,000 B. t. u. 198,664,000 ft.-lb.

A written discussion on the first paper, submitted by Charles E. Sargent, was read by George A. Orrok, secretary of the section. Steam turbines, Mr. Sargent held, have come to stay for very large units, but the oil engine was nearly as economical in a small as in a large unit and for this reason its advent should be welcomed by power users. The constant-pressure oil engine was, in his opinion, superior to the gas engine, as it had a longer range of economical load.

Prof. Arthur J. Frith, of the Armour Institute of Technology, contributed to the discussion in writing. He desired to learn how the difficulty of mechanical delivery of liquid fuel at a high temperature through a valve without air pressure had been overcome and how the difficulty of deposits of carbon had been obviated. In some of the indicator cards from the Setz engine there was a rise of pressure above that of compression which indicated an explosion at the commencement of burning, and the experience of users of the Diesel engine had been that these results followed the introduction of liquid fuel imperfectly broken up by the spray.

A contributed discussion received from Lewis Doelling, vice-president of the De La Vergne Machine Company, explained that the combustion chamber of that company's engine was made cone shape with the oil injection valve at the small end and the igniter in the form of a hot bulb or plate at the opposite end. The air supplied was compressed in this chamber to 250 lb. per square inch and the oil injected in finely divided form by an air blast. The combustion chamber was placed transversely with reference to the axis of the cylinder, an arrangement which had proved advantageous especially where crude oil was burned. These oils contain about 6 per cent. of solid matter and was deposited in the hot bulb and left the exhaust valve without entering the cylinder where it produced wear.

L. B. Lent, of the Riverside Engine Company, New York, regarded both papers as valuable contributions to the literature of oil and gas engine operation. The first paper pointed out to designers and users of Diesel engines the difficulties incident to the manufacture and proper operation. It was his opinion that both oil and gas engines would have to be built with multiple vertical cylinders where large power is demanded with limited floor space, thus following the European practice. Although oil engines of the type described in both papers showed excellent fuel economy and high thermal efficiency, after all the cost of fuel was the determining factor in the cost of a horsepower hour of work, and this would vary according to the location of the plant. The consumption of 0.5 lb. of oil per brake-horsepower hour was a creditable performance in regular operation and could be compared to a fuel consumption of 1 lb. of coal per brake-horsepower in a gas engine and a producer.

H. J. K. Freyn, of the Allis-Chalmers Company, said that so far as he was aware there are no data in existence which show a thermal efficiency based on the brake horsepower as high as 42 per cent. Results as high as 45 per cent. based upon the indicated horsepower had been secured, but these when reduced to the brake-horsepower basis gave a figure of only 32 per cent. The figure of \$65 per horsepower for the cost of engines which was given by Mr. Setz in the addendum to his paper was correct for the United States, although the price abroad was lower. The expiration of the patents on the engine had caused a fall in price in Europe, figures of \$45, \$35 and \$33.60 having been given in a paper read before one of the

French engineering societies for engines of 1000, 400 and 500 hp. respectively. Another factor which contributed to the low cost of these engines abroad was the fact that every builder of internal combustion engines had added a Diesel engine to his line and the speaker believed that the same condition would very shortly prevail here. Comparing the operating cost of this type of engine both in this country and abroad he stated that while the fuel expense was only a small percentage of the cost here and in some cases was as low as one-fifth of that in Europe, the wages paid the attendants abroad were lower and consequently balanced the higher fuel cost. He concurred with Mr. Setz regarding the relatively high cost of attendance for a Diesel engine, because of the character of labor required and this factor would operate against the use of the engine in this country. He believed that there was a wide field for oil engines to propel ships on account of the small amount of space required for fuel storage.

E. D. Dreyfus, of the Westinghouse Machine Company, said that the gas producer and the Diesel engine fields were practically parallel as regards the interest of numerous manufacturers and he believed that this would contribute to lower the cost of that type of engine.

Mr. Setz in closing did not altogether agree with the speaker who predicted that within a few years there would be a large number of manufacturers in the field, as the manufacture of oil engines required extreme care.

#### DESIGN CONSTANTS OF SMALL GASOLINE ENGINES

A paper was presented by Prof. Ennis dealing with the rating of engines for automobiles and the formulas commonly employed for rating these engines. The paper included diagrams illustrating the relation among tractive force, horsepower and speed in the steam engine, the electric motor and the internal-combustion engine.

#### A 1000 KW. NATURAL GAS ENGINE

Edwin D. Dreyfus and V. J. Hulquist, Schenectady, N. Y., presented a paper centering about the manner in which a test was conducted of a 1000-kw. generating set supplied with natural gas and recently placed in service at Allegheny plant of the American Locomotive Company. Supplementing the paper, Mr. Dreyfus spoke of the records made by the engine in handling a 20 per cent. overload, which was 10 per cent. more than the usual capacity of an engine of this type. This in his opinion was due to the richness of the fuel used. While natural gas was the ideal fuel for an internal-combustion engine, it was impossible to secure as good results as have been obtained abroad on account of the difference in labor conditions.

Irving E. Moulthrop questioned some of the cost figures given in the paper, particularly that of \$2.50 per kilowatt for engineering work, which would be about 3 per cent. on the investment. The total cost, however, of \$80.18 per kilowatt he considered remarkably low and it compared favorably in his opinion with the cost of turbo-electric central stations.

George A. Orrok stated that he had figures on the engineering cost of a large power plant which showed the cost to be about 1½ per cent. of the total cost and that in his experience it ranged from that figure to as high as 20 per cent. in the case of some smaller plants.

H. J. K. Freyn said that cost was the determining factor between gas engines and steam turbine plants. His experience has been that the cost of gas power plants using blast furnace gas was less than \$100 per kilowatt and that the difference between blast furnace and producer gas plants was not great.

Mr. Dreyfus said there was sufficient natural gas to enable the plant to run for 15 years and that by that time they could replace the engine economically. With reference to the cost of engineering work, the figure given was correct, although he knew it to be exceptionally low. This he attributed to the fact that the engineer of the locomotive company did not have to devote his entire time to this one plant, as was the case in central station construction; and besides, the construction of the plant was very simple and no drawings and extensive drafting room work were needed.

#### No Need for Steel Corporation Investigation

The usual entertaining scientific address provided for Wednesday evening of the week of the annual meeting

was presented this year by Dr. Robert Simpson Woodward, president of the Carnegie Institution of Washington, D. C., under the title "Geo-Dynamics, or the Mechanics of the Formation of Worlds." No attempt was made to report accurately the dimensions, constitution or physical phenomena of the atmosphere, hydrosphere and lithosphere which constitute this planet nor to outline how the many millions of meteorites falling to the earth each year, or the heat given off by the earth itself or one or two other important happenings are likely to affect many years hence the accuracy of the earth itself as a timekeeper. There was one point, however, brought out by Dr. Woodward which is calculated to discourage investigation by the Department of Justice into the crimes of the steel business. This related to the lithosphere, which, it is proper to say, is the crust of the earth. It is made up of 50 per cent. oxygen, 25 per cent. silicon, 7 per cent. aluminum and 5 per cent. iron. Dr. Woodward intimated that this low percentage of iron might, if generally known, deter Federal activity of the kind mentioned. It is also of interest to the steel industry to state that the lithosphere cannot be regarded as a self-supporting arch structure resisting the inward pull toward the earth's center. Instead it must be regarded as a fluid resting on a nucleus and servant of the same physical laws as affect the atmosphere. To indicate that this is so, Dr. Woodward had calculated that if the earth crust depended on its own strength to resist deformation, it would have to have a crushing strength equal to thirty times that of the finest steel.

#### The Olympic's Machine Shop

The most popular excursion of this year's meeting was the visit to the gigantic liner of the White Star Line, the 45,000-ton triple-screw Olympic. The steamship was boarded a few hours after being warped in at the Chelsea docks. One point of not a little interest was the ship's machine shop. The White Star Line takes quite a little pride in its success in maintaining its vessels in prime mechanical condition. It points, for example, to the Britannic, which, after running for about a quarter of a century, actually commenced to make record passages, and the present Oceanic, which recently achieved a similar performance after 11 years' service.

In the Olympic the workshop is placed on the starboard side between the middle and lower decks. The space contains the following machine tools: One gap lathe, with 12½-in. centers and 14-ft. bed; one 30-in. double-gear vertical drilling machine; one 10-in. shaping machine, with self-acting feed and circular motion; one 36-in. grindstone; one emery wheel. The machines are driven by electric motors through counter shafts. For the lathe, drilling and shaping machines, cone-speed pulleys are fitted direct to this shaft, and can be stopped and started by means of friction clutches. The grindstone and emery wheel are fitted with fast and loose pulleys, and driven from the same shaft. Vise benches are also fitted convenient to the machines.

In addition to the foregoing there are electrical lifting gear and facilities in the engine room for lifting heavy parts. There are two overhead electrically driven cranes for dealing with the heavy parts of the reciprocating engines, and two electric winches at the engine room floor level for the same purpose. These winches can also be used for dealing with heavy weights in the turbine room, tunnels, etc. For lifting the turbine cover and rotor, a powerful electrically driven gear is specially installed.

Evidently no bill to create a permanent tariff board will get through the present Congress. At a meeting of the Ways and Means Committee of the House of Representatives December 7 Representative Payne of New York called up the bill which passed the Senate and House at the last regular session of Congress and was killed when it emerged from conference by a filibuster headed by Representative Fitzgerald of New York. The committee rejected the bill by a strict party vote of 14 to 7.

The American office of C. A. MacDonald, Ltd., ice machinery, has been removed from Chicago to 72 Trinity Place, New York City, owing to the increased volume of export business. The United States business of this company will be continued on similar lines as in the past.

### Cincinnati Metal Trades Dinner

The Cincinnati branch of the National Metal Trades Association held its regular quarterly meeting and annual dinner at the Business Men's Club on Thursday evening, December 7. The speakers were: Hon. Emmet O'Neal, Governor of Alabama; John A. Hill, president the Hill Publishing Company, New York; M. C. Robbins, manager *The Iron Age*; Charles E. Carpenter, with E. F. Houghton & Co., Philadelphia, and William H. Stackhouse, general manager the French & Hecht Company, Springfield, Ohio. At the close of the banquet, John W. Neil, the toastmaster, proposed a toast to J. M. Manley, present secretary of the association, who will assume the position of civic secretary of the Business Men's Club of Cincinnati on January 1, while continuing to have supervision over the local office of the Metal Trades Association.

Governor O'Neal, who is a Southerner of the old school and about sixty, a forceful and brilliant speaker, talked for about an hour and chiefly devoted himself to an argument against the initiative, referendum and recall. He dwelt at some length on the principles laid down by the framers of our Constitution, who were far sighted enough to provide for a representative republican government divided into three parts—executive, legislative and judicial. He argued that the referendum, recall and initiative are absolutely against the principles thus laid down. Present methods of state legislation are well hedged about, since two separate bodies pass upon a bill and it is usually referred to a committee to investigate, while the Governor has the right of veto. All these precautions are lost when the initiative is used. One pointed remark he made on the recall of judges was that any community that contained men good enough to recall a corrupt judge had men good enough to elect an honest judge.

Mr. Hill spoke in his characteristically happy manner. He was optimistic as to the business outlook, believing that conditions are steadily improving and that there are hopeful signs for the future. Referring to the suggested increase in the postal rate on periodical publications he said he was willing to have the government establish a fair rate for second-class matter and he was willing to pay it, but he hoped they would not restrict the amount of business he would be allowed to do.

Mr. Robbins discussed the various factors in the business situation, citing the following significant facts: Bank clearings outside of New York between May and November inclusive, the largest on record for that period; increases in railroad gross earnings, with totals not far behind those of 1907 and 1910; favorable conditions of money supply and rate; steadily increasing exports, with the foreign trade balance mounting higher; decreasing financial failures in the past eight months; crops in 1911 only 0.4 per cent. less than the average for the five years 1905-1909. He believed the present trust agitation would result in a surer basis for trade and industry. In the iron and steel and metal working trades he attributed part of the existing condition to overbuilding and suggested that the volume of business is nearer normal than is generally appreciated, recommending that some manufacturers might come nearer to the real trend of things by readjusting their viewpoint.

Mr. Carpenter's theme was advertising. His principal point was that success in selling consists in "advertising plus". The "plus" consists of good copy, good follow-up letters, organization, salesmen, etc. His stories were witty and well illustrated his points.

Mr. Stackhouse, who was called upon to represent the visiting guests, was not on the regular programme. He made an excellent address, principally on the pending questions relating to large corporations. He protested against the readiness of politicians to prosecute big business interests—a policy bound to discourage industrial development.

Chicago papers reported a fire in the plant of the Massey Vise Company, 9 to 11 West Michigan street, Chicago, on November 14. This was an error, as the company had no fire. The plant is running as usual and there has been nothing to interfere with its regular routine of business nor to handicap its usual delivery of orders.

### The Philadelphia Foundrymen's Association

The Philadelphia Foundrymen's Association held its regular monthly meeting at the Manufacturers' Club on the evening of December 6, Horace L. Haldeman occupying the chair. A discussion as to conditions in the foundry trade disclosed that considerable variation prevailed in the activity of foundries, some jobbing foundries are busier, but those making machinery and special castings were reported as finding an irregular demand for their product. A committee consisting of C. D. Matthews, George C. Davis and A. A. Milier, appointed by the presiding officer to make nominations of officers for the coming year, named the entire list of present officers, as follows: Thomas Devlin, president; Elmer E. Brown, vice-president; Josiah Thompson, treasurer, and Howard Evans, secretary.

The paper for the evening's discussion was on "Motor Trucks in the Foundry Trade," by C. R. Hoyme, sales manager Motor Truck Company, Inc., Philadelphia. Mr. Hoyme's paper concluded with illustrations by lantern slide of the experience of the Saurer "pioneer freighter," the first motor truck to cross the American continent. Many hardships were encountered.

### November Copper Production and Stocks

The statement of the Copper Producers' Association for November is by far the best from the standpoint of the producing interests for many months. A large reduction in stocks of copper had been foreshadowed but the actual figures proved to be far greater than given in any forecast. The statement is as follows:

	Pounds.
Stock of marketable copper of all kinds on hand at all points in the United States, November 1.	134,997,642
Production of marketable copper in the United States from all domestic and foreign sources during November	111,876,601
Deliveries of marketable copper during November:	
For domestic consumption	68,039,776
For export	67,049,279
Total	135,089,055
Stock of marketable copper of all kinds on hand at all points in the United States, December 1.	111,785,188

It is thus shown that the shrinkage in stocks in November was 23,212,454 lb., having been the largest reduction made in any month of this year. The stocks of copper are now the smallest since February, 1910. The factors contributing to the month's heavy decrease in stocks were large deliveries, both for home and foreign consumption, and an unusually small production. The November output was the smallest with one exception for the entire year. If the reduction in stocks had been entirely due to the small production the result would have been much less encouraging to copper producers than the fact that the deliveries have heavily increased, thus showing a noteworthy expansion in trade.

**Briquetting Flue Dust.**—At the present time, when there is so much interest and discussion as to the best method of treating flue dust and iron ores that they may be converted into the best physical and chemical condition for future use in blast furnace operations, it is interesting to note that the Cambria Steel Company, Johnstown, Pa., has about completed the installation of an experimental plant in which it is going to apply the Schumacher and Ronay briquetting processes which are in such successful operation in Germany, Belgium, Russia, etc., where over 1,000,000 tons are now annually briquetted. The General Briquetting Company, 25 Broad street, New York, is the owner of the American rights.

**Two New Lackawanna Open-Hearth Furnaces.**—The Lackawanna Steel Company, Buffalo, N. Y., is adding two open-hearth furnaces, each having a capacity of 120 tons per day, to its open-hearth steel plant. This will give the company 13 open-hearth furnaces, with a total capacity of 1560 tons daily. The erecting of the new furnaces is being done by the company's own force of men. Piles for the foundations are now being put in.

# Great Iron-Making Nations

They Also Have First Places Among World Powers—The Situation To-Day and in Other Periods

BY R. H. SWEETSER.\*

The international iron and steel conference held in Brussels last summer called forth from the press much that was skeptical; and some newspapers have expressed grave doubts as to the results of a co-operative movement of iron and steel makers whose influence would be greater than that of many leading nations of the world. The possibilities of such an international organization as was considered at the conference are so great and so far-reaching that many writers have been stunned by contemplating the magnitude of the power that could be wielded by such an association; and some alarmed writers have expressed much fear because of the possible domination of the iron and steel makers in the affairs of the world.

It is no new thing that the iron makers should dominate in the affairs of the world. The new thing is that hope expressed by Judge Gary "that representatives of the steel industry throughout the world, acting in harmony and presenting an undivided front, may be of use in assisting to bring about universal peace." History plainly tells us that the greatest world powers in all ages have been those nations making the most iron and steel. These world powers have reached and have maintained their position through victorious wars; and nations having the most and best iron makers have thus far been the victors. Hitherto much of the skill and energy of the iron men has been directed toward armaments and ammunition. It may reasonably be affirmed that their success would be as great if they were devoted to peace.

## Earlier World Powers Pre-eminent in Iron

What are the qualifications of a world power? "World powers are those nations that are directly interested in all parts of the world and whose voices must be listened to everywhere," says Professor Coolidge in his book, "The United States as a World Power." The three greatest world powers at the present time are without doubt England, Germany and the United States; they also are the greatest makers of iron and steel. The greatest world powers during the sixteenth century, beyond contradiction, were Spain, France and England, and in these three countries the manufacture of iron flourished more than in all the rest of the known world. At the beginning of the Christian era the Roman Empire was the one great world power, and the Romans made more iron and steel than all the rest of the nations put together. The history of the world previous to the time of the Roman Empire and the history of all the years since then show that at any period the dominating nations were those having the most and best makers of iron and steel.

When the ships of Spain were sailing all the then known seas and the Spanish adventurers were penetrating to the very ends of the earth, when the Spanish rule extended over much of Europe and most of the new world, there were burning in the mountains of Catalonia the fires of a thousand forges. For hundreds of years after the Romans obtained a foothold in the country, Spain ranked first in the manufacture of iron and steel, and during all that time Spain was the foremost world power.

During all the time that England ruled the seas and was first among the powers whose influence was felt all over the world, and up to within a comparatively few years, the iron and steel works of Great Britain produced a greater tonnage than those of any country in the world. The time when the United States first surpassed all other nations in the manufacture of iron and steel was also the time when this country took its place among the greatest world powers.

## Actual Manufacture of Iron the Test

It is not enough that a country should possess large iron ore deposits within its borders; the country which

\*Superintendent Columbus Iron and Steel Company, Columbus, Ohio.

manufactures the iron and steel from the iron ore is the country that becomes a world power. The countries of northern Africa have exported much iron ore from their vast deposits, but they do not manufacture any iron; they are not world powers.

National affairs in our country have been greatly influenced by those States leading in the production of iron and steel, from the time of the earliest iron works in Virginia and New England down to the present. It is no accident that the great political influence of Ohio should be coincident with its position in second place as an iron producer and that the present geographical center of the iron business of the country should be within the boundaries of Ohio.

What is true of nations in this respect is also true of groups of men. As an illustration of the powerful influence of the iron business in large affairs, I quote from the speech of Judge Gary, of the United States Steel Corporation, at the international meeting of iron and steel manufacturers held in New York in October, 1910. Judge Gary said: "I regard our meeting as being of the highest importance. It is just as though three or four of the leading monarchs of the world had come together to discuss the affairs of their respective nations with a view to friendly relations, but without the power to enter upon binding treaties."

## Possibilities of China and Canada

So much for the past; so much for the present; now let us look into the future and consider the probable results of the awakening of the iron industry in two great nations on opposite sides of the earth. The two countries that promise most in the way of undeveloped and unexplored iron ore deposits are China and Canada; and, strange as it may seem, both countries in the past year have shipped iron ore and pig iron into the United States, even though in relatively small quantities.

To the north of us, stretching from the Great Lakes to the North Pole, and from ocean to ocean, is a wonderful country, one that three centuries ago was better known than our own. Up to the time of this present generation Canada was practically a few provinces along our northern border. It was provincial in every sense of the word. Its tendencies outside the activities of the Hudson Bay Company were agricultural and piscatorial. Previous to the opening of this present century its mineral wealth had scarcely been more than prospected, except for considerable activity in the Maritime Provinces. Realizing the necessity of developing the iron resources of the Dominion, and recognizing the need of governmental protection for the making of iron, some of the Canadian statesmen brought about, against much opposition from the farming districts, a system of protective tariff and bonuses for iron and steel manufactures. A thin line of iron and steel plants now dots the shore line of the Great Lakes system from Nova Scotia up to the head of Lake Superior. But even in this year of 1911 these few steel plants look to the United States for a large part of their iron ores.

So far Canada and the mother country have failed to grasp the opportunities that lie so abundantly just across our northern border, and much of the development of the iron resources has been due to American capital and enterprise. If the British empire ever regains its supremacy as an iron-making nation it will be due to the future iron works of Canada. If Canada ever takes its place as a world power it will be when it manufactures within its borders the iron and steel necessary for the extension of its thousands of miles of railroads.

The position of China as an iron producer was well described by Sir Robert Hadfield when on his tour around the world last year. He said: "If he who owns the iron of the world rules the world," as an old proverb says, then the future of China is indeed of the greatest importance."

For hundreds of years some iron has been made in China, but the annual production is not yet of much importance.

It is not the intention of this article to discuss the reasons why the leading iron-making nations should be the greatest world powers; history gives us the fact that the iron makers have been the victors. Then, since the iron makers have been such powerful helpers in war, is it not as reasonable to believe that they can be just as powerful as peacemakers? The metallurgical and mechanical skill now devoted to making armor to withstand the shocks of the projectiles from ever greater guns could be devoted to making rails and bridges that would stand the wear and tear of ever-greater locomotives and cars. The iron structures of peace, instead of the iron destroyers of war, would make the market for the iron and steel of the world, and then, even as in the past, the iron-making nations would still be the world powers.

## A Corporation Commission

### Chairman Gary's Further Suggestions on Government Supervision

Chairman E. H. Gary, of the United States Steel Corporation, appeared again December 7 before the Senate Committee on Interstate Commerce, having been asked to develop more in detail the proposal for Government regulation of large corporations. He said that industrial corporations must have some means of finding out authoritatively what is an unreasonable restraint of trade, so that they may not take steps which will make them liable to Federal prosecution. Among other things he said:

No corporation has the right to object to the Sherman law if it means, as I think it does, that no combination shall be created with the purpose of creating a monopoly, or the necessary result of which shall be the creation of monopoly; or which shall be carried on for the purpose or with the result of unduly restraining trade. If corporations are prevented from creating monopolies or unduly restraining trade, then the public is protected.

The Sherman law leaves every one in that position, but the trouble is that no one, not even the courts, knows what will be in undue restraint of trade. In the daily management of our business we are uncertain what is opposed to the public interest, in the meaning of the Sherman law.

If the United States Steel Corporation has not done business in a fair way, if it is not doing business fairly now, I am willing to concede that there ought to be a law to compel it to do so. It was formed to do in a business way what I think has been done fairly and honestly since it was organized. If we have not done that, or are not doing that, if we are of injury to anybody, I concede that Congress or the courts ought to stop us.

#### As to Over-Capitalization

Senator Pomerene asked whether the Steel Corporation subsidiaries were not over-capitalized, to which Judge Gary replied:

On the basis of the original cost of the plants they were, undoubtedly, and so was the United States Steel Corporation. But, on the basis of actual values and the cost of reproduction of the plant at that time, if it could have been reproduced, I believe the value of the properties of the corporation was very little, if at all, under the capitalizations. The Bureau of Corporations of the Government has said that we were over-capitalized some \$500,000,000 or \$600,000,000, but no allowance was made for the fact we were a going concern, or for the cost of reproduction; and the value of the ore and coal properties was based on their original cost and not upon the values which they now have.

#### Federal Steel Company Needed Capital

Chairman Gary was of the opinion that separate and individual companies could not have achieved the results secured by the Steel Corporation, even with the same amount of money put into them, either in the home or the foreign trade. Referring to the considerations leading up to the organization of the Steel Corporation, he said:

At the time I was president of the Federal Steel Company and we were making a success of our business, one of the largest in the trade. It was then evident to me that we were too limited as to our financial resources to meet the demands of the business upon us. I was one of

those who were urging the necessity of large additional capital to enable us to properly carry on and protect the steel business. Probably the organization of the United States Steel Corporation started from this agitation.

After Andrew Carnegie offered to sell his large holding to Morgan, the latter sent a partner to me asking me to meet him at his bank. I went and told Mr. Morgan that I believed that the plan of organization of the Steel Corporation would take the place of raising additional capital for Federal Steel which would be necessary to meet the opportunities before it for additional business. I called in H. H. Rogers, H. H. Porter, Marshall Field, and N. R. Reams, directors of our company, and laid the plan before them. After an all-day conference, they agreed with me. Upon a report of this fact reaching Mr. Morgan, he replied: "If you gentlemen think this a good business proposition and can organize and carry on a company which will result as suggested, I will undertake to finance it."

The leading purpose and motive was to form a corporation for business purposes which would be a real and substantial benefit to the business interests of the country and not for the purpose of being inimical to any business interest or any one else. I don't deny that the syndicate which financed the plan realized a large profit from its work, and I do not deny that some of those interested in the plan received financial benefit; but I do not think it right and fair to say that the transaction was a Wall Street exploitation.

#### How a Federal Commission Could Work

The members of the committee appeared to consider that Judge Gary had not been as explicit as they desired, in detailing how he would provide in a bill for a Federal Commission with power to pass in advance on acts proposed by corporations. He thought that there might be cases, in times of financial distress, when the commission should be authorized to suspend the operation of the law, and when agreements between manufacturers to maintain prices or limit output might be approved by the commission for a limited period, but those agreements, he thought, should not be of such a character as to constitute an undue restraint of trade.

Judge Gary said that he believed in co-operation as against the old-style competition, but he did not believe in co-operation which would result in undue restraint of trade or be inimical to the public interest. Co-operation would still be competition, but a commission should have the power to fix maximum prices. That power was especially necessary in such times as the panic of 1907, when corporations in the same line of business should be allowed to make agreements among themselves under the supervision of the commission.

He said that until the filing of the recent suit against the Steel Corporation he had supposed that it was perfectly lawful for competitors to get together to discuss their business, tell each other their prices and their customers, and form such friendly relations as would maintain the equilibrium of trade. He had not believed that this was against the law and he was quite certain that it was not in restraint of trade, but the opposite. Such co-operation as that does not fix prices, but establishes a decent kind of competition, leaving every competitor free to name his own prices.

## The Lumen Bearing Company Expands

The business of the Lumen Bearing Company, brass founder, Buffalo, N. Y., and Toronto, Canada, is growing to such an extent that it has been found necessary to materially enlarge the organization both in its selling and operating forces. Recent additions and improvements have been made in both the Buffalo and Toronto plants. The changes made in the organization are as follows: H. P. Parrock, formerly Western representative, has been appointed sales manager, succeeding Allen Kendall, resigned. H. F. Russell, formerly purchasing agent, has been appointed sales representative covering central and western New York and eastern Pennsylvania, Albert Lockwood succeeding him in the office of purchasing agent. Louis S. Jones, for many years with the Prentiss Tool & Supply Company, has been appointed sales representative in New England. H. O. Schwaner has been appointed sales representative in the Pittsburgh district. Fred Ganderton, formerly with the Aluminum Castings Company, has been appointed sales manager of the Toronto plant.

## Obituary

Harry R. Hall

Harry R. Hall, who has been superintendent of the Crane Iron Works furnaces of the Empire Steel & Iron Company at Catasauqua, Pa., for the past six years, died in the German Hospital, Philadelphia, December 10, having undergone an operation there a few days before. He was born at Magadore, Summit County, Ohio, attended the Cleveland public schools and was a graduate of the Ohio State University at Columbus. His first work as an analytical chemist was with the Carbon Iron & Steel Company at Parryville, Pa. He resigned that position to become chief chemist at the Crane Iron Works in 1890. A year or so later he resigned this position to take charge of the furnace at Parryville as superintendent and remained there until the furnace was closed down on account of business depression. He then went to Middlesboro, Ky., and was in charge of the Watts furnaces later acquired by the Virginia Iron, Coal & Coke Company; and afterward at Dunbar, Pa., was superintendent of the plant of the Dunbar Furnace Company. He was for a time connected with the Wellman-Seaver-Morgan Company at Pittsburgh and Cleveland and later was superintendent in charge of the Sault Ste. Marie furnaces of the Lake Superior Corporation for two years and for two years following was superintendent of the Delaware & Hudson Company's furnace at Standish, N. Y. Soon after resigning his position with the Delaware & Hudson Company he was engaged as superintendent of the furnaces at Catasauqua. In the administration of his duties there he showed marked ability, public mention frequently being made of the record of the furnaces he was operating. Mr. Hall was a member of the American Institute of Mining Engineers and of other professional societies and had a wide acquaintance in the iron trade, being highly regarded in his profession. He leaves a widow, a son and a daughter.

## Pittsburgh and Vicinity Industrial Notes

In 24 hours last week, No. 3 open-hearth department of the Homestead Works of the Carnegie Steel Company turned out 3961 gross tons of ingots, the best previous record having been 3717 tons. This plant contains 24 50-ton furnaces.

The Youngstown Sheet & Tube Company has placed a contract with the Westinghouse Electric & Mfg. Company, East Pittsburgh, for 99 motors for cranes, charging machines, transfer tables and blooming mill for the new open-hearth plant. Fifty-six of these cranes call for a new type of direct-current motors. This is said to be the largest single contract of this kind ever placed.

The Pittsburgh Valve & Fittings Company has awarded a contract to the Jones & Laughlin Steel Company for the steel for a one-story addition, 60 x 560 ft., to its foundry at Barberton, Ohio.

The Standard Steel Tank Company has broken ground for an addition to its plant at Girard, Ohio.

H. A. Reed, of the Baird Machinery Company, Pittsburgh, has been appointed temporary receiver of the Pittsburgh Automatic Air Pump Company on application of the Brown & Zortman Machinery Company, creditor.

P. H. Meighen, Waynesburg, Pa., auditor in the settlement of claims against the Waynesburg Forge Sheet & Tin Mills, made his report to the court December 1, which shows that the claims amount to \$203,000, while the available cash is \$35,000. Of this amount about \$20,000 will be paid to the receiver of the Farmers' and Drovers' Bank. The report shows that the creditors will receive 17 per cent. of their claims.

The Union Drawn Steel Company, Beaver Falls, Pa., manufacturer of cold drawn steel shafting and bright drawn steel shapes, has opened an office in 801 Fulton Building, Pittsburgh, with Joseph A. Simonton in charge.

Among contracts recently received by W. N. Kratzer & Co., structural steel fabricators, Pittsburgh, is one for the erection of a steel frame factory building for Hubbard & Co., shovel and tool makers, Pittsburgh, requiring 160 tons of steel; contract from Moorhead, Brother & Co. for a 165-ft. crane runway, with 32-ft. span; train shelter sheds for the Baltimore & Ohio at Clarks-

burg, W. Va., one 508 ft. long and the other 775 ft., and a steel frame factory building, 50 x 82 ft., for the Buck-Hannah Chemical Company.

**West Penn Steel Company Improvements.**—The West Penn Steel Company, Brackenridge, Pa., will make extensive improvements. An extension is to be added to the main building providing 50,000 sq. ft. more of floor space. The building is to be made 1000 ft. long. It is 80 ft. wide. There will also be a lean-to of 50 x 350 ft. for warehouse and shipping purposes. The new buildings will be of steel frame construction. The company now has 7 hot mills and 7 cold mills in its sheet mill equipment and will add 3 hot mills and 3 cold mills, and will roll sheets up to No. 10 gauge, 48 in. wide x 144 in. long. When the new mills are added it is the intention to run the cold mills separately, and they will be driven by turbine engine with exhaust steam. The open-hearth steel works and sheet mills are being operated to full capacity, with good orders ahead for the company's high-grade black and galvanized steel sheets. A northern Ohio sales office has been opened in the Chamber of Commerce building, Columbus, Ohio, with Thomas Beard in charge as assistant sales manager.

**The Carnegie Veterans.**—Andrew Carnegie entertained the Carnegie Veterans' Association at dinner at his home in New York, Friday evening, December 8. It was the tenth annual reunion. Of the 48 men associated with Mr. Carnegie in the old Carnegie Steel Company, all but four are living, and of the 44 only eight were absent from this year's reunion. These were: John G. A. Leishman, American Ambassador to Germany; P. T. Berg, Stockholm, Sweden; Millard Hunsiker, Paris; and William L. Abbott, James G. Hunter, J. A. Potter, George H. Wightman and E. F. Wood. Informal remarks were made by Mr. Carnegie, D. M. Clemson, George E. McCague, Gibson D. Packer and Charles M. Schwab. W. B. Dickson, the poet laureate of the Veterans' Association, read his annual poem. Mr. Carnegie was elected president for the new year, C. M. Schwab, vice-president, and Charles L. Taylor, secretary.

**Western Steel Corporation.**—Creditors of the Western Steel Corporation at Seattle held a meeting at Seattle, Wash., December 12, and elected the following trustees: Lester Turner, Sutcliff Baxter and Edgar Ames. The first two have been serving as receivers of the company. A representative of the Metropolitan Trust Company of New York proposed an immediate reorganization of the company, and it is stated that if the creditors will agree to an early sale the trust company will undertake the formation of a new company and have the steel plant in operation in the early part of 1912.

**The New Corrigan-McKinney Steel Works.**—The new steel plant that Corrigan, McKinney & Co. recently announced that they intend to build in Cleveland, Ohio, in connection with their two blast furnaces in that city, will include a slabbing and blooming mill, in addition to 8 open-hearth furnaces, according to present plans, but no finishing mills. The products of the plant, as now proposed, will include billets, slabs, blooms, ingots and sheet bars.

**New Mills for Steel Company of Canada.**—The Morgan Construction Company, Worcester, Mass., has been appointed engineer for the construction of a blooming mill, continuous billet mill and continuous bar and rod mill by the Steel Company of Canada. The new mills will be added to the latter company's Hamilton, Ont., plant.

The Toledo Shipbuilding Company, Toledo, Ohio, has taken an order from the Thousand Islands Steamboat Company for a passenger boat to be delivered June 1, 1912, for the St. Lawrence River trade. The boat will be 175 ft. long, with a 32-ft. beam.

The Anderson Engine Company, manufacturer of gas and gasoline engines, Shelbyville, Ill., has decided to move its main office to Chicago for the purpose of taking better care of its trade. The location of the office will be announced at an early date.

## Duplex Facing Machine

### A Recently Developed Tool for Machining Both Surfaces of Castings Simultaneously

A special motor-driven, double-head facing machine for operating on the inside and outside of castings simultaneously has been recently constructed by the Rochester Boring Machine Company, Rochester, N. Y., for use at the Erie works of the General Electric Company. Fig. 1 is a front view of the machine, while an end elevation showing the position of the facing arms and the driving motor, which is mounted on the same base as the machine, is given in Fig. 2.

As will be noticed from Fig. 2 the two facing arms are located in different vertical planes and are of different lengths. The shorter arm, which has a radius of 15 in., is designed to be inserted into the bore of the casting and face the inner surface, while the longer arm, which has a maximum radius of 25 in., operates simultaneously on the outside. Since the surfaces to be machined are not continuous and as a consequence the cutting is intermittent, it is pointed out that it is especially important to have the surfaces true, straight and smoothly finished. The rigidity of the entire machine and the ample section of the facing arms in combination with the general construction of the tool, it is claimed, have produced a machine that is very satisfactory for doing the work required. The tool holder is so arranged as to be able to feed at right angles in either direction, or if desired it can be swiveled to any angle, the exact amount being indicated by graduations. A star wheel is employed to control the feed for facing.

The standard drive is by a single pulley having a constant belt speed, although in this particular case an adjustable speed motor is employed and, in combination with the mechanical speed changes provided by the gearing in the machine, gives a speed range of from 8 to 1 or from  $\frac{1}{2}$  to 12 r.p.m. The machine and the motor are mounted on a single platen or base to make the tool self-contained and portable and in this particular case it is arranged to be used in connection with one of the builder's floor type horizontal boring machines, which was illustrated in *The Iron Age*, June 20, 1910. In the operating position the facing machine is located on the floor plate of the machine with which it operates and the two machines work simultaneously on the same casting.

The hardened nickel steel driving worm and worm gear run in oil and all the gears and running parts are enclosed and fully protected. The machine is started and

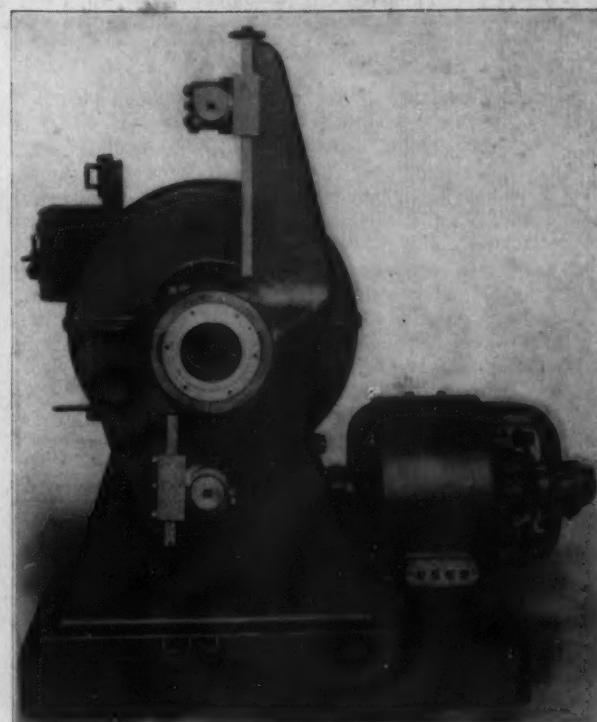


Fig. 2—An End Elevation Showing Position of Arms and Driving Motor

stopped and the speed changed by manipulating the lever located as shown in Fig. 1 on the front of the column. This arrangement enables the operator to control the machine easily without leaving his regular position.

While this machine is built especially for double facing it is possible to secure one which will do both boring and facing. In a machine of the latter type the spindle will bore holes having a maximum diameter of 6 in. It has separate bearings in the housing and is driven by spline keys fitted into the sleeves upon which the main driving gear is mounted. Various feeds are provided for the spindle when boring and a large hand wheel provides a quick longitudinal traverse. To meet the requirements of any special case suitable feeds and speeds can be provided.

### The International Congress of Navigation

The Twelfth International Congress of Navigation is to be held in Philadelphia in 1912 under the official invitation of the United States Government. The problems of both inland and ocean navigation are to be considered. The one comprehends questions of river regulations, dredging, dimensions of canals for heavy traffic, operating canals, locks, and freight transfers at ports. The subject of ocean navigation is to include docking and repairing vessels, dredges and submerged rock removal, application of reinforced concrete, ferry bridges, tunnels under waterways and safety of navigation, including lighted buoys. The date is to be announced by the permanent international commission, composed of representatives of different countries. The United States members are Brig.-Gen. Charles W. Raymond, Brig.-Gen. William H. Bixby, Lieut.-Col. Harry F. Hodges and Lieut.-Col. J. C. Sanford of the United States Army, and E. L. Correll and John Bogart, consulting engineers.

The greatest cotton crop on record, 14,885,000 bales, is the Department of Agriculture's official estimate of the country's total production this year. This is greater by 1,447,000 bales than the record crop of 1904. Unofficial estimates made monthly during the year, using the department's condition figures as the basis, were greatly exceeded by the official estimate just announced.

William A. Roome, sales agent for boiler and tank plate and iron and steel boiler tubes, has removed to 608 Commercial National Bank Building, 72 West Adams street, Chicago, owing to increased business and the necessity for larger quarters.

Fig. 1—Front View of a New Duplex Facing Machine Built by the Rochester Boring Machine Company, Rochester, N. Y.

AMERICAN CIVIL ENGINEERS,  
PITTSBURGH, PA.

# The American District Steam Company

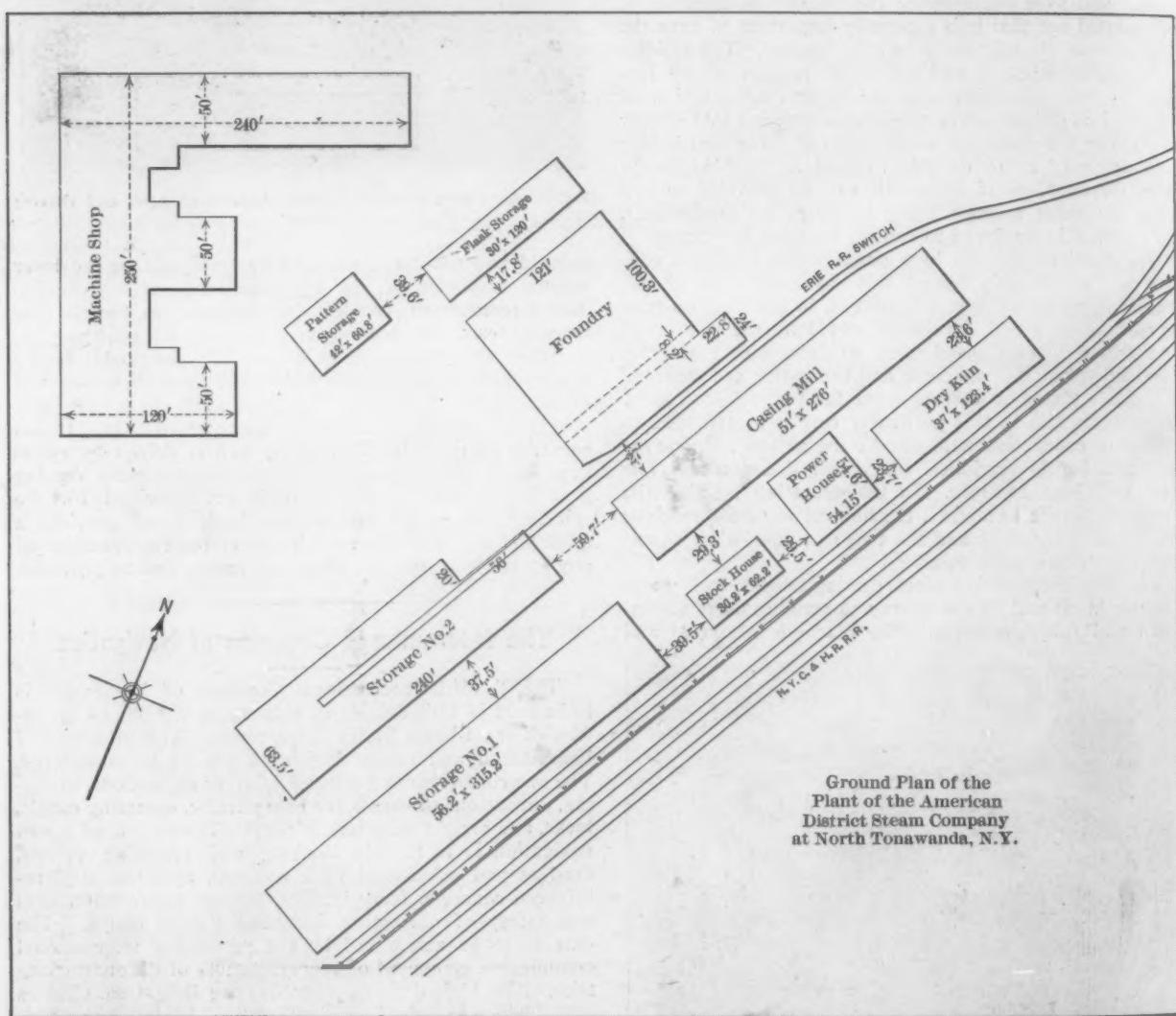
## Description of the New Plant at North Tonawanda, N. Y.

With the removal of its machine shops and offices from Lockport, N. Y., the various departments of the plant of the American District Steam Company are now located together at North Tonawanda, N. Y. This plant is designed and equipped for the manufacture of the material, devices, etc., necessary for the complete installation and operation of central steam heating systems. Since the introduction of this method of supplying heat by the famous engineer Holly of Lockport in 1877, there has naturally been a great development in the various methods and materials used. The American District Steam Company has been responsible for most of this development, which has led to its well organized plant and its present "standard" equipment for these systems.

In the accompanying ground plan of the plant the dimensions and positions of the various buildings are given. The offices are located on the second floor of the machine shop. It will be seen from this plan that the plant is served by both the New York Central and Erie railroads.

### Steam Mains Are Insulated

The method to be used for insulating the steam pipes of a central heating system, which lead underground from the central station, has been the subject of a great deal of experiment. For the steam pipes themselves the best wrought iron is employed, as this has been found to give the best service. This pipe is purchased from pipe manufacturers under most rigid specifications.



The idea of central station heating has also experienced rapid growth, until now there are over 300 systems in operation scattered over this country, and with many in Canada. The highest development is a central station furnishing light, heat, and power to a community—the light and power by means of electricity from steam-driven generators, and heat by means of the exhaust steam from the engines. This exhaust steam is distributed through properly designed and insulated mains, and taken through service pipes to the residences, office buildings, etc., in which radiators are installed. Here the steam is condensed and its heat made use of, together with that of the hot water produced, the water being at room temperature when discharged into the sewer. Suitable provision is made to admit live steam to the mains if it is found to be necessary.

The method of insulation finally adopted is the use of specially designed wooden casing. In standard practice this casing is 4 in. thick. Its internal diameter is 2 to 3 in. greater than that of the iron pipe to be covered, which is centered in the casing by means of cast-iron guides and rollers placed about 7 ft. apart. In this way an annular air space is produced which is a very important factor in the heat insulation. The interior of the casing is lined with the best 30 lb. AAAA charcoal tin plate. This is used because the bright surface reflects back the heat waves to the steam pipe and also protects the casing.

The insulation is done in the casing mill, where the greatest attention is given to every detail. The basic material is carefully selected live white pine timber. It is first thoroughly air dried, approximately 1,500,000 ft.



Fig. 2—View in the Casing Mill, Showing the Binding Machine and Other Equipment

being kept in stock. From the piles it goes to a kiln, through which it takes about three weeks to pass. The timber then goes to the north end of the casing mill. Here

it is sawed and planed into radial staves of the proper angle for the different sizes of casing, a tongue and groove being cut running the length of each stave. These are then



Fig. 3—Interior of the Iron Foundry



Fig. 4.—North Wing of the Machine Shop, Looking Toward the Incoming Platform.

placed in the banding machine shown in the foreground of Fig. 2, where they are automatically bound together with  $3/16$ ths galvanized steel wire. The pressure used is sufficient to embed the wire in the wood, and leave a practically smooth surface.

The casing is next taken to the mortise and tenon ma-

chine seen in the background. Here a mortise and tenon are cut on each end respectively, the tenon being 4 in. long and the mortise  $4\frac{1}{2}$  in., to allow of the joints being tightly driven together. These parts are treated with creosote, and the casing is revolved, horizontally, on rollers that allow the surface to just dip into a bath of liquid asphalt.



Fig. 5—North Wing of the Machine Shop, Looking from the Incoming Platform.

This is continued until the surface is covered with a considerable thickness, then while still hot it is rolled in sawdust which sticks to the asphalt and leaves a surface that enables the casing to be readily handled. Before leaving the casing mill the tin plate lining is put into place.

Casing with walls only 2 in. thick is made for insulating hot water lines, and also wooden stave pipe with a shell about the same thickness.

This pipe is made to stand cold water pressures up to 200 lb., special banding being used when the pressure is above 40 lb. It is extremely suitable for carrying water, for sewers, irrigation lines, and chemical fluids. When kept filled with water it is practically indestructible. A very large stock of casing with internal diameter from 3 to 27 in. is kept on hand in storage house No. 1.

#### The Foundry

The next part of the plant to be described is the foundry. Its position in relation to the casing mill and storage houses is shown in the ground plan. An interior view

#### The Machine Shop

This is a large two-story building of peculiar shape, as shown on the ground plan. The entire lower floor and much of the upper floor are given over to the various departments coming under the machine shop superintendent. These include the machine shop, tool room, brass shop, meter shop, tin and copper shops, carpenter shop, assembling, testing and meter testing rooms, and finally the packing department. At the east end of the lower floor is the shipping and time keepers' office, and immediately outside this is the shipping dock, served by a railroad switch.

The machine shop building is fireproof throughout, being built of reinforced concrete. The castings and material to be machined and made into the many articles necessary for complete steam heating systems are received on a platform at the end of the long wing near the foundry. A view looking down this wing toward the platform is shown in Fig. 4, where the frequent use of individual motor



Fig. 6—The Copper Shop

showing the cupola and part of the molding floor of the iron foundry is given in Fig. 3. The cupola is a 60-in. diameter Whiting, which by means of a thick lining has been reduced to 48 in. About 50 per cent. of the molding is done by machines, which are all Tabors except one Bryan Vacuum machine. They are in a row behind the columns to the right of the picture. By trial, one iron mixture has been found that gives the requisite good results, and this alone is used. The work consists almost entirely of steam fittings and condensation coils, and the iron is purchased from the neighboring Tonawanda blast furnace plant. Very good arrangements are made for storing the molding sands used.

In a bay separated from the iron foundry is the brass and alloy foundry in which is a coke-fired crucible furnace holding four pots. The brass, bronze, aluminum, and white metal parts that are needed in the manufacture of the company's products are cast here. Very careful provision is made for storing and using the different turnings, etc., from the machine shop and the scrap from the foundry.

The pattern storage and flask storage buildings are conveniently near to the foundry, as may be seen in the ground plan. The well equipped pattern shop is on the upper floor of the machine shop building.

drive for the machines can be clearly seen. A view of this same wing looking from the platform end is given in Fig. 5, where the electric drive used for the big planer is very noticeable in the foreground. At the left of this picture the tool room can be seen, separated from the rest of the machine shop by a low brick partition and a metal grating. This tool room is also evident at the right hand side of Fig. 4.

The superintendent's office is glassed in, and from its interior an excellent oversight of practically the whole lower floor of the shop can be had. Painted floor lines are used which clearly define the broad gangways, inside which no material is allowed to be placed.

The meters are a very essential part of the equipment of a central station steam heating plant. By them the condensed water produced from the steam used in a house or office building is accurately measured. This, of course, gives a measure of the steam supplied and furnishes a just basis for the charge for service. It has been proved to be much more satisfactory than any kind of a flat rate. Fig. 6 gives a view in the copper shop where the special measuring buckets used in the meters are made, together with diaphragms, gaskets, etc. A number of these buckets can be seen on the bench near the center of the room. This shop is situated on the second floor at the end of



Fig. 7—The Meter Testing Department

the long east wing. Immediately opposite to it in the short north wing is the meter testing room shown in Fig. 7, with a number of finished standardized meters on the floor. Attention may be drawn here to the splendid natural lighting found in all departments of the machine shop.

Before briefly describing the office part of the building the power house must be visited. Its position near the drying kiln is shown on the ground plan. Steam is furnished by two 150 hp. Stirling boilers, and provision is made to use the shavings, etc., from the casing mill for steam raising. From here the plant is supplied with power, light, and heat, the exhaust steam being used for this latter purpose. The main load is carried by a Skinner tandem compound engine operating a 185-kw generator. The other two units are an Atlas Corliss engine driving a 125-kw generator and a Mackintosh & Seymour high speed engine with a 150-kw generator. The mains are connected with those of the Tonawanda Light & Power Company for use in case of emergency.

The general office is located in the machine shop building. A visitor from the street entrance comes into a main room, around which the private offices, directors and consultation rooms, etc., are arranged, and so have efficient outside lighting. The engineering department is situated in the north wing. This department is equipped with a spacious vault for storing tracings and records, and has a well arranged blue print room where artificial light is used.

Throughout the plant evidences are many of the care that has been taken to supply the needs and look after the comfort of the employees. This reaches its culmination in a lunch room, having a kitchen thoroughly modern in its equipment, electricity being used for heating. Lunch is provided for the officers and heads of departments, the members of the engineering department, and the office force.

The whole plant shows the result of careful thought and is designed to give the best quality possible in the various products. These products are themselves very interesting, many of them being the final results of over 30 years' experience. Each building is so arranged that expansion is possible with which to meet future increased demands.

### Standard Bridge Tool Equipment

The Standard Bridge Tool Company, Pittsburgh, Pa., has completed the installation of special machinery in the Canadian Bridge Company's works at Walkerville, Ontario, Canada. In this equipment is a 48-in. Thomas spacing table fitted with a multiple punch, designed for the heavier class of work. It is arranged to handle two pairs of angles up to 8 x 8 in. and 80 to 90 ft. long, two plates up to 36 in. wide or one wide plate and beams and channels for web punching. This type of machine is adapted for boiler plates, tanks, sheets and similar work. The operation is entirely automatic except the control of the gears on the punch, for which hand levers are provided. The punch is especially designed for working in connection with a spacer. Fixtures are provided for guide angles in pairs, and the entire arrangement is designed with a view of setting it in the shortest possible time. A variable-speed motor on the punches provides variation in the speed from 15 to 30 strokes per minute, permitting speeding up on short spacing and slowing down on the longer spacing to take each stroke of the punch.

The Standard Bridge Tool Company also has an order for four large and two small spacing tables for the Haskell & Barker Car Company, Michigan City, Ind. The four large tables are to be operated automatically throughout and the multiple punch is equipped with gag control mechanism by which each punch can be controlled individually and any combination can be operated at any stroke desired, at 24 strokes per minute. Each of these machines will be driven by a 40-hp motor. They will have 10 ft. clearance between housings, and will handle at one time eight angles 50 ft. long, four car sills or four plates up to 30 in. wide. The two smaller tables are designed to handle two angles each up to 50 ft. long, two channels up to 15 in. or one beam up to 24 in.

More than 150 Russian workmen were plunged into ice floes in the Volga River December 8 through the collapse of a railroad bridge under construction near Kazan. A large number were drowned.

# The Jones Process for "Metallizing" Ore

What Has Been Accomplished by the "Step" Furnace—A New Plant About to Be Started at Republic, Michigan

Various references have been made in these columns to the tube furnace built by John T. Jones at Iron Mountain, Mich., for the treatment of iron ores and non-ferrous ores by what is known as the Jones "Step" process. As has been previously explained, this process as applied to iron ores provides for metallizing the oxides by subjecting them to heat treatment in a reducing atmosphere without fusion. It is thus offered as a substitute for the blast furnace, and the claim has been that it prepares a metallic product, 97 per cent. pure iron, suitable preferably for briquetting and charging into the open hearth, or for melting and pouring into castings. That the desired amount of carbon may be added by proper handling in the cupola is said to have been demonstrated by experiments made at Pittsburgh.

The tube furnace at Iron Mountain was erected so as to rotate in an inclined plane, but this arrangement was the cause of the final abandonment of the plant. It was found that regardless of the speed of rotation the larger pieces of ore traveled through the tube in much too short a time and the finer particles in a correspondingly excess time. With the abandonment of this plant the plan of making muck ball was also given up. It was found impossible to hold a lining in the reducing atmosphere at the temperature necessary. The Iron Mountain furnace consisted of one long tube, while a plant which has been under construction at Republic, Mich., is quite different in form, being composed of three sets of two short tubes each, arranged in tandem. This plant will be ready to fire about January 1.

## Features of the Republic Operation

Mr. Jones acquired the old Kloman mine at Republic, a deposit which can be mined by quarrying and consisting of a banded silicious ore averaging in the neighborhood of 40 per cent. in iron. In preparation for the furnace this ore is crushed and passed over a  $\frac{3}{4}$ -in. mesh, the object being to promote a physical uniformity of the product and eliminate differences of effect due to the varying size of the pieces charged. It is proposed to charge into the first of the pair of tubes 2½ tons of the silicious ore, which being of 40 per cent. iron, should yield an even ton of metallic iron when reduced. The cost of the ore delivered at the furnace is 50 cents per ton, which would make a charge for ore of \$1.25. Coal, such as is used, will cost \$2.50 for each charge of ore. The elementary material cost for a ton of metallized iron is thus \$3.75. The mixture of coal and ore composing the charge may be preheated to a temperature of 700 deg. by an oil flame. At this temperature the reducing action between the hydrocarbons in the coal and the oxygen in the ore is shown to begin, and the preheating flame is shut off. The subsequent operations are outlined by the inventor substantially as follows:

The first stage of the process is largely one of heating the ore to a temperature of 1500 deg. with the attendant volatilization of the hydrocarbons in the coal, partial reduction of the ore and the formation of CO gas. The pressure in the furnace due to the development of this gas is sufficient to establish a circulation and also to force the gas over into the second furnace of the pair, where a reducing atmosphere is established for a new charge of coke and stone. When the action in the first tube is completed, which fact is established by a time limit, this furnace is cut off from the second, the charge is dumped and quenched to save the coke formed. Following the quenching, the metal, associated with the silicates and the coke, is jigged to bring about a separation of the coke from the metallic product. The metallized ore is then run through crushing rolls to be prepared for magnetic separation, which frees the metal from the silicate. Where the ore is a banded type this separation is practically complete; but where the nature of the ore is such that

the gangue is intimately mingled with the metallic oxide a loss of from 10 to 15 per cent. is entailed.

The crushed metal is then formed into briquettes, either by pressure which causes the interengaging of the sharp, irregular particles or where desirable a tar binder may be used. The metallized ore, after the reduction, is at no time subjected to a fusing temperature; and it is stated that in the experiments thus far, in the course of which 1000 tons of ore has thus been reduced, subsequent oxidation is negligible and is in no sense an obstacle to the completion of the process.

## The Field of the Jones Process

The conclusions available from what has been demonstrated by the "Step" process thus far, as regards iron ores, are reasonably obvious. An apparatus has been devised for isolating the operations and reactions occurring in the upper zones of the blast furnace and of recovering the product at that stage. The cost of so doing corresponds approximately to the cost of the incomplete blast furnace operations. The perfection of this apparatus mechanically to provide for the handling of this product in quantity should be comparatively simple. If the cost of the process could be brought sufficiently low to permit of handling the metallized product in competition with high grade ores, a large field might be presented for the output of the "Step" process as raw material for the blast furnace. Thus far the practical operation of the process, with the exception of the one cupola experiment mentioned above, seems to have been confined to the metallizing of the oxide. Concerning the operations necessary to incorporating in the metallized ore those ingredients desirable in pig iron (either for foundry purposes or for supplying heat and other proper conditions in the making of steel) and the facilities required for controlling the analysis of the iron, no definite substitute appears to have been offered for the work performed in the boshes and crucible of the blast furnace.

## A Highly Reputable French Steel

The Chatillon, Commentry & Neuves-Maisons Steel Corporation, with offices at 19 Rue de la Rocheoucauld, Paris, France, is one of the oldest manufacturers of war implements and railroad equipment. It operates 11 large and modern plants, owns several coal and ore mines and employs about 12,000 men. Naturally it was called upon by the pioneers of the automobile industry to supply them with special steels that would meet the difficult conditions required by the new mode of locomotion. After years of experience in making these steels, the company has acquired such a reputation that to-day its plants are supplying the leading manufacturers of America, Belgium, England, France, Germany, Italy, etc. Tests have been made in its specially equipped laboratories to give each part of a machine a special steel, fit for the work it is called upon to perform. Among others the brands BFM and Incassable are widely used for all kinds of forgings, gears, bearings, shafts, cams, etc. A large quantity of these brands in round shape is carried in stock and samples will be furnished on request by Maurice Goodman, 32 Broadway, New York, who represents the company in this country and Canada and is also representative for T. Inman & Co., Ltd., Sheffield, England, manufacturers of high speed and other tool steels.

The William B. Pollock Company, Youngstown, Ohio, has issued Supplement No. 22 to its general book of views of modern blast furnaces which it has built. The new publication shows views of D furnace of the Central furnaces of the American Steel & Wire Company at Cleveland, Ohio. The Pollock Company built furnaces B and C of this group in 1905.

# Titanium and Low Carbon Basic Steel

## The Effect of Varying Additions of the Former to Open Hearth Furnace Heats

BY G. B. WATERHOUSE, PH.D.

The object of this article is to give the results obtained with four basic open-hearth heats, to which varying amounts of ferrotitanium had been added. They were all

to the usual way when making this kind of steel. The usual additions were made in the ladle when the heat was tapped, and were followed by the proper amount of ferro-

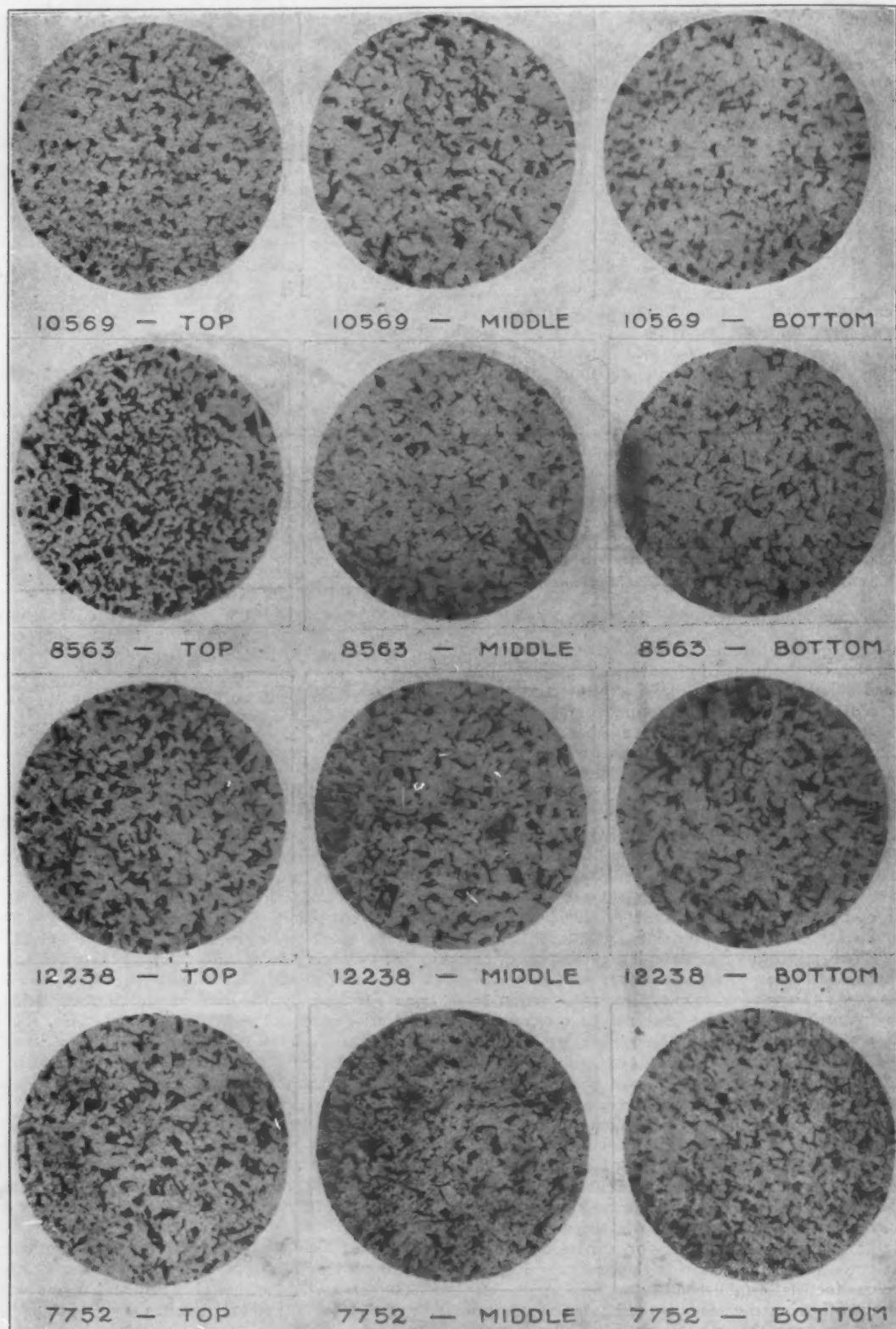


Fig. 1—Reproductions of Microphotographs of Round Bar Specimens. Magnification, 80 Diameters

low carbon, and it was the intention to make steel suitable for working up into tin and galvanized plate. The bath of metal was worked down in the open hearth according

titanium. In each case all the alloy had been introduced before the slag came. There was only a slight reaction. The alloy used was the 10 per cent. ferrotitanium sold

by the Titanium Alloys Company and contained 10.9 per cent. titanium. The steel was held for 8 minutes in the ladle and then bottom poured into  $19\frac{1}{2} \times 23$ -in. ingots. In order to obtain comparative tests two plain heats were also taken.

#### Analyses

The analyses of the ladle tests taken when about one-third of the heat was poured were as follows:

Heat No.	Kind.	Amt. Met.	C.	S.	P.	Mn.	Si.
2,686	Plain	None	.082	.062	.048	.40	.026
3,824			.100	.041	.066	.38	.016
10,569	Fer.-Ti.	.025%	.102	.044	.067	.44	.018
8,563	"	.050%	.107	.039	.063	.33	.028
12,238	"	.075%	.124	.030	.059	.38	.015
7,752	"	.100%	.148	.034	.066	.35	.012

The carbon was carefully estimated by combustion; the sulphur by an evolution method; the phosphorus by solution and reduction of the yellow precipitate, and final titration with standard potassium permanganate. The manganese was estimated by the ammonium persulphate method, and the silicon by the use of a mixture of nitric and sulphuric acids.

#### Tests on Rounds

The steel was stripped while hot, placed in the soaking pits and heated in the usual way. One ingot from each of the special heats and one plain heat were rolled down to  $4 \times 4$ -in. billets. The ingot was taken from the middle part of the heat so as to give average material. From each of these ingots three billets were taken—from the top, middle and bottom respectively. They were carefully marked and after reheating were rolled down to  $\frac{3}{4}$ -in. rounds, from which samples were taken for testing. In the following table are given the results of tensile and Brinell hardness tests on the bars as rolled. They are the average of two closely agreeing determinations. The Brinell tests were made with a 10-mm. ball and 3000-kg. pressure, the pressure being exerted in a direction parallel with the rolling:

#### TENSILE AND BRINELL TESTS ON ROUNDS.

No.	Kind.	Place.	El. Lt.	T.S.	El. % in 8 in.	Red. Area %.	Brinell.
2,686	Plain	Top	38,200	56,375	29.6	53.9	118
		M.	38,360	55,930	30.2	61.6	102
		B.	37,020	53,730	33.7	64.8	95
10,569	Ti. .025%	Top	40,000	61,230	27.1	52.3	121
		M.	38,560	59,580	28.7	56.4	112
		B.	39,800	58,470	30.6	58.9	112
8,563	Ti. .05%	Top	39,160	58,740	27.7	55.3	131
		M.	38,600	58,120	31.6	63.6	110
		B.	37,890	56,890	30.0	63.1	104
12,238	Ti. .075%	Top	36,850	60,080	27.7	56.1	136
		M.	38,350	61,000	29.7	64.3	113
		B.	40,180	61,150	30.0	64.7	116
7,752	Ti. .10%	Top	40,300	64,940	26.3	52.8	131
		M.	40,180	62,810	30.6	60.0	115
		B.	39,160	61,500	28.1	58.6	114

#### Tests on Sheet Bars

Three of the special heats and one plain heat were rolled first into billets and then directly into sheet bars. This was with the exception of the one ingot that went into  $4 \times 4$ -in. billets. The last special heat, No. 7752, was too high carbon for sheet bars. The sheet bar is the semi-finished product. In making it the ingot is rolled to a billet  $7 \times 4\frac{1}{4}$  in. and then goes direct to a Morgan continuous mill. Here it is rolled to a bar 8 in. wide and of the required thickness to give the right weight per foot. In this case the thickness was a little over 0.5 in. The bars are cut into 30-ft. lengths by means of a flying shear. In this case also an ingot was chosen from near the middle

of the heat and samples were cut at the flying shear from the finished sheet bar at the top, middle and bottom. These pieces, as mentioned before, were 8 in. wide. Three pieces were cut longitudinally from them about  $2\frac{1}{2}$  in. wide, one directly in the middle and one at each side. These were machined for tensile tests. The results are given in the following tables, where those given on pieces from the side are the average of the two determinations on pieces from each side. The Brinell tests were made in the same manner as before.

#### TENSILE AND BRINELL TESTS ON SHEET BARS.

Heat 3824, Plain:

Place.	Width, In.	Thickness, In.	Elast. Limit.	T.S.	Elon. % 8 in.	Red. Area %.	Brinell.
Top cent.	1.710	.525	36,040	58,720	29.6	48.5	140
side	1.705	.520	35,970	57,600	30.9	59.0	135
M. cent.	1.710	.520	34,810	56,110	34.4	62.5	124
side	1.710	.520	35,870	57,260	32.3	61.2	130
B. cent.	1.710	.525	35,150	54,760	33.8	51.0	122
side	1.710	.525	35,460	55,600	34.1	62.6	123

Heat 10,569, Ti. 0.025%:

Place.	Width, In.	Thickness, In.	Elast. Limit.	T.S.	Elon. % 8 in.	Red. Area %.	Brinell.
Top cent.	1.710	.525	40,050	63,100	24.3	40.8	165
side	1.710	.525	39,910	60,130	30.0	54.9	141
M. cent.	1.710	.515	38,210	59,910	29.4	57.2	132
side	1.710	.515	40,000	60,600	30.0	56.1	135
B. cent.	1.715	.520	38,290	58,200	31.2	61.0	131
side	1.715	.515	39,030	59,060	30.3	57.0	131

Heat 8,563, Ti. 0.05%:

Place.	Width, In.	Thickness, In.	Elast. Limit.	T.S.	Elon. % 8 in.	Red. Area %.	Brinell.
Top cent.	1.715	.545	38,150	59,590	29.1	47.0	160
side	1.710	.545	37,600	57,210	29.4	58.2	140
M. cent.	1.710	.540	36,530	57,950	30.6	60.9	144
side	1.715	.540	37,600	58,270	29.9	60.3	137
B. cent.	1.710	.540	38,230	57,760	28.1	53.3	—
side	1.710	.540	37,960	57,250	31.3	60.8	134

In the case of 8,563 the bottom center piece was slightly laminated.

Heat 12,238, Ti. 0.075%:

Place.	Width, In.	Thickness, In.	Elast. Limit.	T.S.	Elon. % 8 in.	Red. Area %.	Brinell.
Top cent.	1.710	.520	36,450	60,450	30.0	52.9	152
side	1.710	.515	37,180	58,740	30.3	60.0	139
M. cent.	1.710	.520	37,070	59,870	30.0	58.1	136
side	1.710	.515	37,000	60,570	30.1	58.9	139
B. cent.	1.715	.520	38,370	59,370	30.0	50.1	—
side	1.715	.520	38,600	60,580	30.7	59.9	137

In this case also the bottom center piece was slightly laminated. The microphotographs made were magnified 100 diameters. (In the accompanying illustrations, Figs. 1 and 2, they are somewhat reduced.) They were taken in a direction transverse to the rolling and the samples were etched with picric acid.

#### Consideration of Results

The analyses show a gradual rise in carbon with increasing amounts of alloy, which is due to the steel absorbing carbon from the alloy. In the case of heat 7752 the resultant carbon was too high for tin plate, so the steel was rolled into  $4 \times 4$ -in. billets and rolled finally into other orders.

The first tests to be considered are those on the  $\frac{3}{4}$ -in. rounds. Here it may be plainly seen that the titanium treated steel has a higher ultimate stress than the plain steel. At the same time, the ductility as shown by the elongation and reduction of area is only slightly lower. The Brinell tests closely follow the results of the ultimate stress. It would be interesting to work this comparison out closely, both in the case of the rounds and of the sheet bars. This the writer hopes to do in the near future, also considering much more extended tests now being executed.

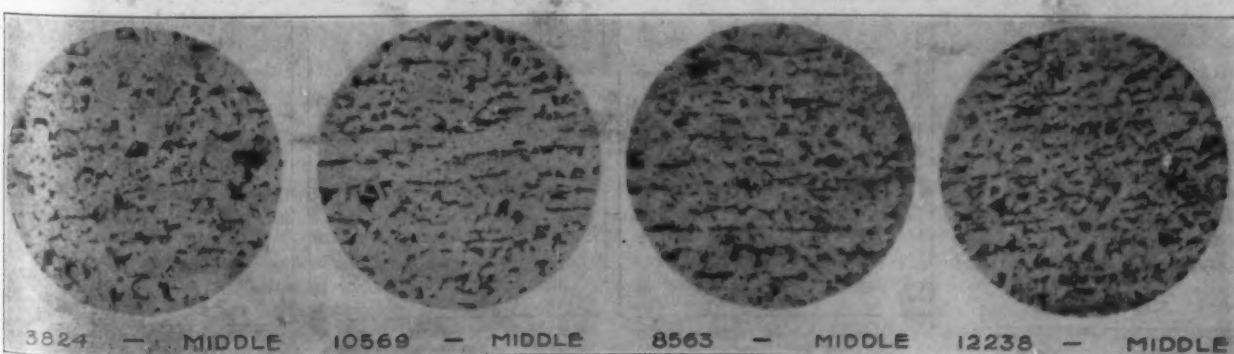


Fig. 2—Reproductions of Microphotographs of Sheet Bar Specimens. Magnification, 70 Diameters

The pieces marked "top" show a lower ductility than the rest of the steel, and in the case of 7752 the tenacity is markedly higher, which would indicate some segregation.

The results of the tensile tests on the sheet bars are in general similar to those on the rounds, the tenacity as shown by the elastic limit and ultimate stress being distinctly raised and the ductility only slightly lowered.

The general effect of the titanium seems to have been to give solid clean steel that gives evidence of being very uniform throughout the ingot.

### New Fueling Lighter

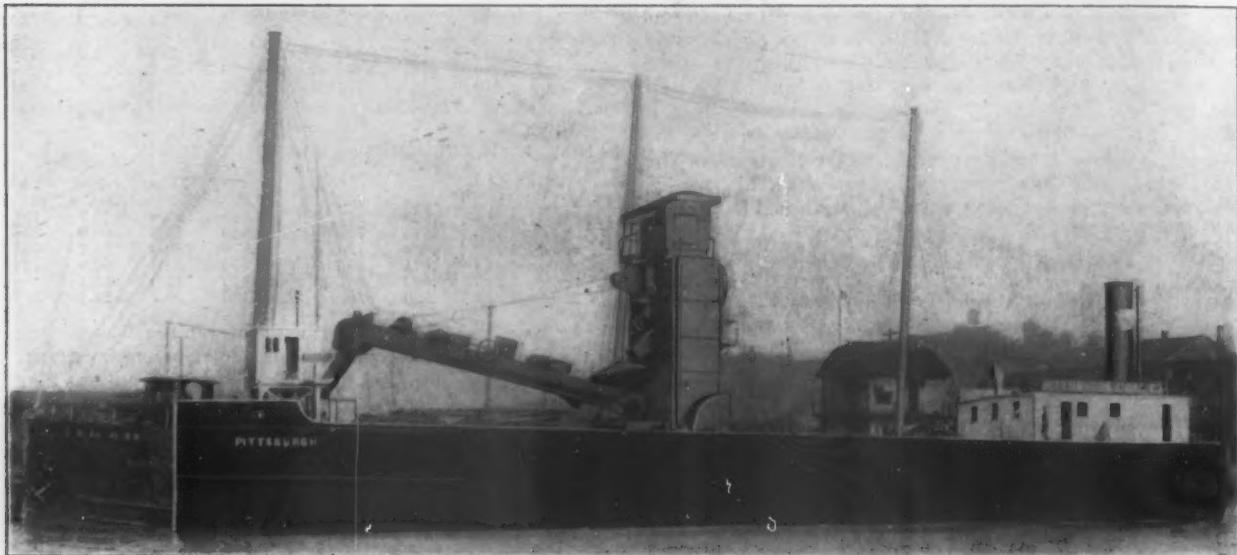
At the Great Lake ports the rapid loading and unloading of vessels have also made the rapid coaling of steamers necessary, and as the result of this demand many types of fueling lighters have been brought out. The most recent, and what is also claimed to be the most rapid, vessel of this type that has ever been built was recently constructed for the Pittsburgh Coal Company and used in the Cleveland harbor during the past season. The boat portion of the lighter is a steel hull having a length of 156 ft. over all and an over-all width of 40 ft. which with the engines was constructed by the American Shipbuilding Company. Twin screws propel it at a speed of approximately 12 miles per hour and the vessel has a twin rudder so that it can be easily handled in the narrow and crooked

The regular way of loading the lighter is to have a swinging boom equipped with buckets similar to those on the vessel let out from the docks. Coal is fed into these pockets from a hopper beneath elevated tracks, into which the fuel is delivered directly from hopper bottom cars. In addition the lighter can also be loaded directly through an ordinary car dumper.

Safety devices are provided for the entire equipment, which is rigidly constructed and arranged with a view of securing easy operation of all parts. Another feature of it is the design which tends to give stability to the boat, the list being only about 6 in. under the extreme conditions of loading and the swinging of the boom to the maximum outward position.

### The Flat-Top Fuel Company

The Thomas-Cooper coal interests in the Pocahontas region have been combined. Edward Cooper, of Coopers, W. Va., has acquired an interest in the Flat-Top Fuel Company, and, effective April 1, 1912, that company will distribute, in addition to the coal and coke from the mines of Col. W. H. Thomas, the widely-known Cooper coal mined at Mill Creek, McDowell and Coaldale operations. These mines were opened by the late John Cooper, a pioneer in the Pocahontas region, are now owned by the Cooper Estate and are under the personal management



A New Lighter for Handling Coal Constructed by the C. O. Bartlett & Snow Company, Cleveland, Ohio.

channels of the Cuyahoga River, at the end of the harbor at Cleveland. The carrying capacity is 1000 tons and it will load 400 tons of coal in the bunkers of a steamer in an hour.

A series of 20 pockets arranged ten on either side of the hull carry the coal. These pockets each have a capacity of 50 tons and are provided with two gates so arranged that the flow of coal to the reclaiming conveyors is accurately controlled. These conveyors operate toward the center of the boat, where they discharge into an elevator which lifts the coal to a swinging boom provided with a drag conveyor. A swinging and telescoping chute is fastened to the end of the boom and is so arranged that it is possible to discharge coal into the bunkers of the larger steamers without trimming. This arrangement enables the lighter to be operated with a minimum crew, only four men being required beside the captain. Independent motor drive is used to operate the conveyor and the coal handling machinery, which is controlled from the operator's house placed on top of the elevator. The machinery, which was built by the C. O. Bartlett & Snow Company, Cleveland, Ohio, is of the automatic switch type and is interlocked so that the various conveyors and elevators cannot choke up if the fuse in the supply line between the Ridgeway generator set placed in the after cabin and any one of the seven motors should blow out. Three motors are required to operate the boom and the chute and one for each conveyor and elevator.

of Edward Cooper, who had years of training under his father. The coal from the Cooper mines has formerly been handled through the William C. Atwater agency. The Flat-Top Fuel Company will now be enabled to develop new territory into which it may make shipments of Pocahontas coal.

At a meeting of the directors held December 2, Edward Cooper was elected a vice-president of the company. The other officers are as follows: President, Col. W. H. Thomas; vice-president and general manager, O. M. Deyeler; secretary and treasurer, W. J. Pritchard; Western manager, Holly Stover, Chicago; Ohio and Indiana representative, Edward K. Shera, Richmond, Ind. The company will, as heretofore, maintain its general offices at Bluefield, W. Va. At that point an office for the proper handling of cars and supervision of inspection will be maintained, with McDowell Smith in charge.

The punching and shearing machines exhibited at the Turin Exposition by Henry Pels & Co., 90 West street, New York, were awarded two grand prizes. The exhibit included nine power machines for heavy duty and a number of hand machines. Among the power machines exhibited were a one-stroke beam shear, a beam shear combined with punch, a single-ended coping machine, a large bar shear, a triple combined punch, plate shear and bar cutter, a scrap shear and a newly patented beam shear for cutting structural shapes without waste of material.

## Improved Contractor's Light

### A Recently Developed Headlight for Use on Building, Subway and Street Work

Recently the Pyle-National Electric Headlight Company of Chicago, Ill., has placed on the market an improved type of electric headlight for use by contractors on buildings and subway and street work where night shifts are employed. Some of the requirements for an outfit of this character are that the light shall be capable of being diffused or concentrated readily while the generating equipment will withstand hard usage and at the same time not be dangerous for the men working around it, all of which are said to have been met by this light. The distribution of the light from one of these headlights together with a view of the light itself is shown in Fig. 1 and Fig. 2 illustrates the turbo-generating set supplying the current.

The lighting outfit consists of a small arc lamp and a special reflector which is shown in the upper left hand corner of Fig. 1, and a small steam turbine directly connected to a dynamo which furnishes current for the lamp. This current is generated at a potential of approximately 35 volts and this low figure is said to eliminate all danger of electric shock, regardless of how carelessly the apparatus is handled. Steam from the boilers, hoisting engine, shovels or other machines can be used to run the turbine, a  $\frac{3}{4}$ -in. pipe being all that is required to supply steam to the turbine. But little attention, other than an occasional oiling, is required by the turbine and the use of a governor keeps the speed constant even though there

The dimensions of the entire outfit are 30 in. long and 18 in. high and wide. The weight is approximately 320 lb, and no special foundation is required. It is thus possible to place the outfit in any convenient location since the amount of space required is small. The dynamo is of

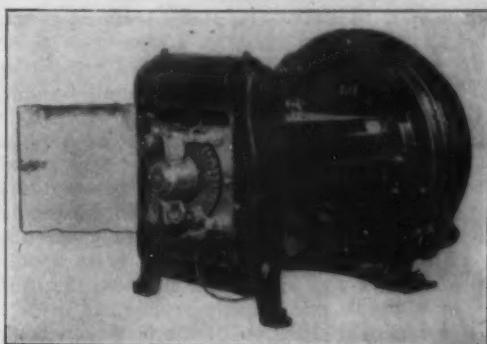


Fig. 2—The Turbo-Generating Set Used with the Headlight

sufficient capacity to furnish current not only for the headlight but for several incandescent lamps in addition.

The lamp and reflector which are shown in the upper left corner of Fig. 1 have been specially designed for construction work and are both inclosed in a waterproof casting, the complete weight being 92 lb. A flexible cable connects the dynamo with the lamp case, which can be readily removed. The carbons used will burn between 8 and 9 hr. without change. The reflector is built to diffuse and dis-

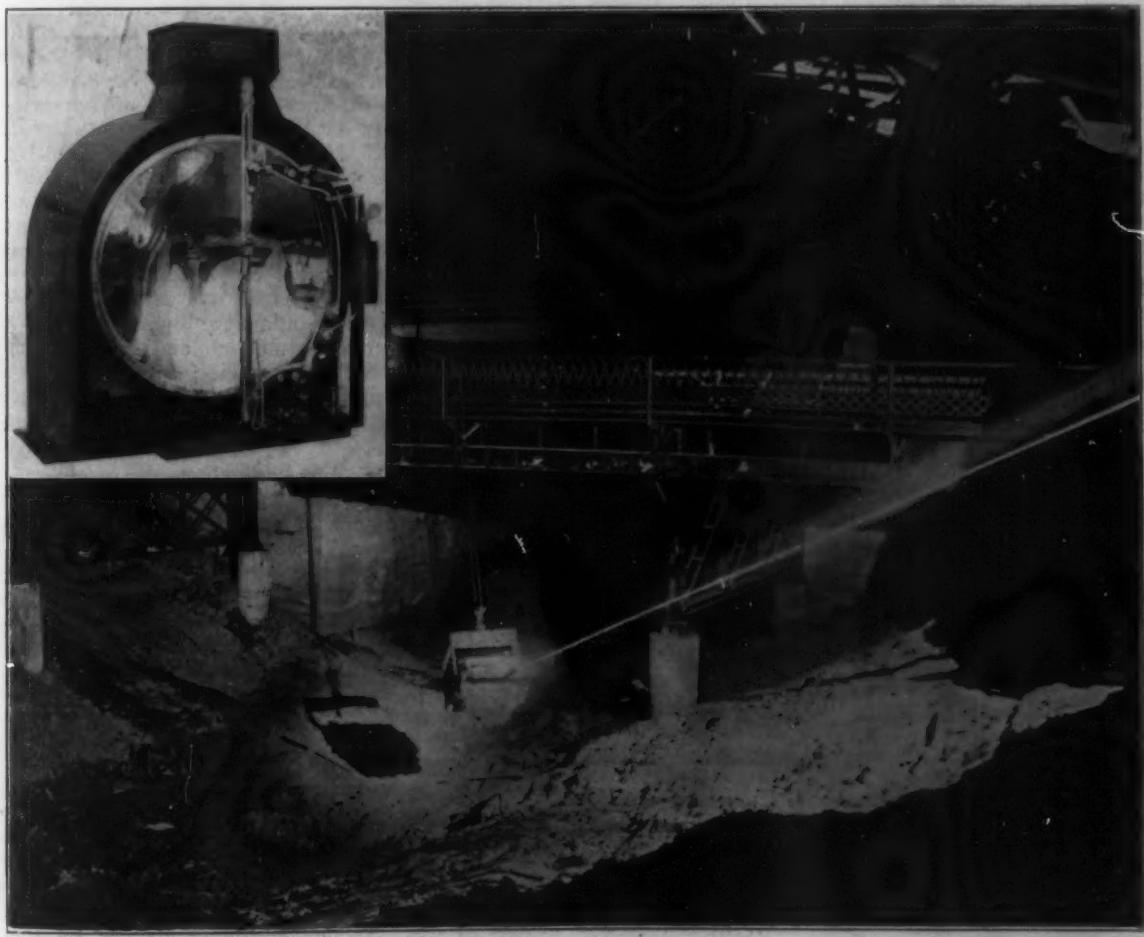


Fig. 1—View Showing the Distribution of Light From a New Contractor's Headlight Manufactured by the Pyle-National Electric Headlight Company, Chicago, Ill.

may be sudden variations in the steam pressure. As an additional safety precaution a centrifugal brake that is set to act when the speed at which the governor operates is exceeded is also provided.

A dynamo is directly connected to the turbine and is mounted on the same base as illustrated in Fig. 2, both portions of the set being inclosed in a weatherproof case.

tribute the light over a wide area, but by employing a sliding base the position of the lamp with reference to the reflector can be changed to secure concentration within a small area. A view of the distribution of the light is given in Fig. 1. When the reflector is set to diffuse the light an area within the radius of 150 ft. is brilliantly illuminated.

## New Bituminous Gas Producer

### The Nordensson Type Developed by the Standard Gas Power Company

With a view to embodying those features of gas producer design that contribute to simple and economical operation without using any complicated attachment, the Standard Gas Power Company, 604 Walton Building, Atlanta, Ga., has placed on the market its type F bituminous furnace gas producer which is constructed according to the Nordensson system. Some of the special features of the producer are the elimination of the burning of gas in the producer to the greatest possible extent, a regular distribution of the fuel supply, convenient inspection and poking of the fire, the absence of any grate upon which clinkers and ashes can accumulate and stop the draft and the use of a simple and cheaply replaceable brick lining. Fig. 1 is a sectional elevation of the producer, while Fig. 2 shows two of the producers in operation at a brick kiln which is one of the fields in which this producer is claimed to be especially efficient.

#### Constructional Details

Referring to Fig. 1 it will be noticed that the producer shell is a simple steel cylinder, supported on piers in a water seal, *a*. These piers are so placed that they will not interfere with the ready removal of ashes through the water which can be done at will, without interrupting the continuity of operation. The shell has a straight lining of fire brick, *b*, which is free from slopes and projections, an arrangement which it is pointed out lessens the chances of an uneven draft being produced and resulting in a reduction in capacity, or in some cases placing the unit out of commission until the accumulated clinker could be

top and these are large enough to be used for inspection purposes as well as for poking while the covers which are loose enable them to be employed as relief doors. Additional poke holes *f* are placed where they will take care of average operating conditions without using the larger doors and one of the special features of these holes is their location close to the inner face of the brick lining so that the fire can be poked from this point.

The charging hopper *g* is of the double valve type and the fuel is distributed by dumping through the opening made by lowering a bell. With this hopper the fuel is charged in equal quantities at regular intervals and the bell distributes the fuel in an advantageous manner away from the center and this distribution has been shown by experience to be consistent with the area of most rapid combustion and most accessible poking. The capacity of the hopper is the same as the fuel consumption of the producer for a certain period so that it gives the advantages of continuous automatic feeding without using the expensive and complicated mechanisms generally employed, it being only necessary to charge the hopper at periods when previous charge of fuel has been consumed. One of the special features of this arrangement is that before the bell drops the hopper is closed at the top so that there is no escape of gas when the fuel is being charged.

From the producer the gas is led off through a large brick-lined outlet, *h*, which is connected with the main gas flue *i*. The general method of connecting the outlet with the flue is a straight vertical downtake connected as illustrated, but this arrangement is subject to the conditions prevailing at the particular plant where the producer is installed. For cutting the unit out of service a plate valve, *j*, in the outlet neck is employed. This valve consists of a steel plate sliding between flanges and having at one end a hole equal in area to that of the gas outlet while the other is solid. Set screws which loosen the plate by forcing the flanges slightly apart and bolts which lock it in position render the manipulation of this valve easy so that the producer can be quickly cut in or out of service according to whether the hole in the valve plate is opposite the outlet or not. If it is necessary for a unit to deliver waste gas to a stack or waste flue, this can also be easily and quickly done, because when these conditions prevail the producer is designed with the outlet opening into a tee in which a double throw sand sealed valve is located, the flow of gas either way being diverted by a movement of the valve. In many cases this arrangement will be found convenient for putting the individual units of a producer battery into commission and cutting them out of service. When the former is being done the gas is wasted until the fire is in proper condition and then it is diverted to the main flue by a single movement of the valve.

#### Gas Purification

For reducing the amount of impurities carried over with the gas, a section of the main gas line is sometimes led directly downward from the outlet into a water seal pit, the gas being taken off through a horizontal connection between the neck and the lower end of this section. The vertical section is carried into the water seal with a full sized opening at the bottom. The object of this is to avoid as far as possible the accumulation of soot and tar in the main gas flue, while a large proportion of this matter which is suspended in the gas is caught in the trap and can easily be removed from the pit which is always open for cleaning. While it is not claimed that the periodical shutdowns for burning out the flues and cleaning them from accumulated soot and tar are entirely done away with by this arrangement, it is pointed out that a large part of the suspended matter is caught in the trap and removed during operation, thus prolonging the period during which the flues will be clean and free for carrying a full volume of gas. Another advantage claimed for this arrangement is that the trap outlet fulfills the function of a relief or explosion door and an explosion in the line is relieved through the water seal without admitting air, since the outlet is again automatically sealed as soon as sufficient gas has escaped. Inspection doors are provided at convenient locations which are held in place by specially designed clamps and are easily removable by hand. The vertical downtake shown at the right of Fig. 1 is capped by a loose door, *k*, resting in a sand seal, and kept in position by its own weight. If any excess pressure is present in the flue, it can be relieved by lifting the door.

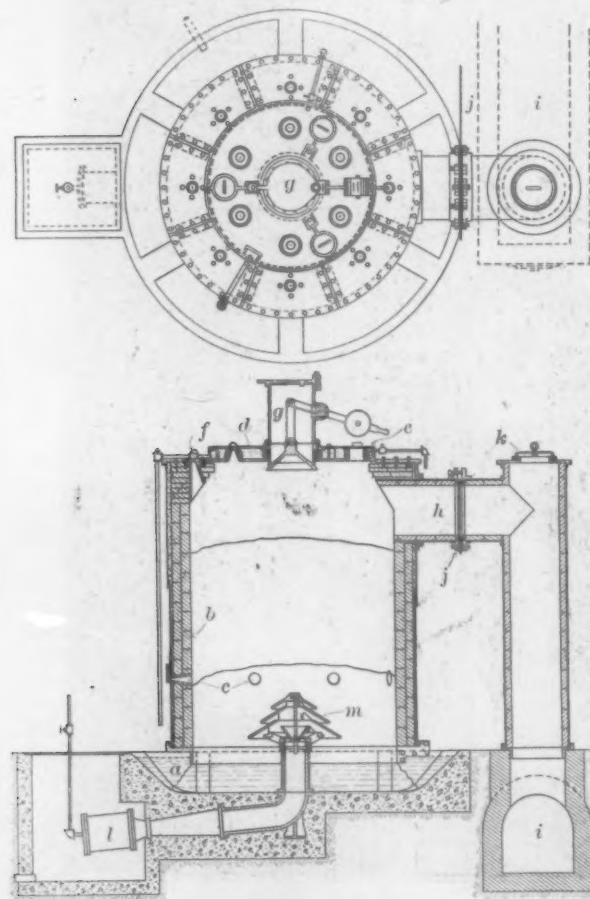


Fig. 1—Sectional Elevation of the Nordensson Furnace Gas Producer Built by the Standard Gas Power Company, Atlanta, Ga.

removed. For poking and inspection, poke holes *c* are conveniently arranged along the top and the sides.

The top of the producer is water cooled with a plate, *d*, over the cooling trough to provide a cool, dry place for the operator to stand on and further protection is afforded by the brick lining which is arched on the inside. Several doors *e*, having water sealed covers are located in the

The air blast is furnished by a blower, *J*, which gives the proper proportions of steam and air and is controlled by a single valve in the steam line. The blast is introduced

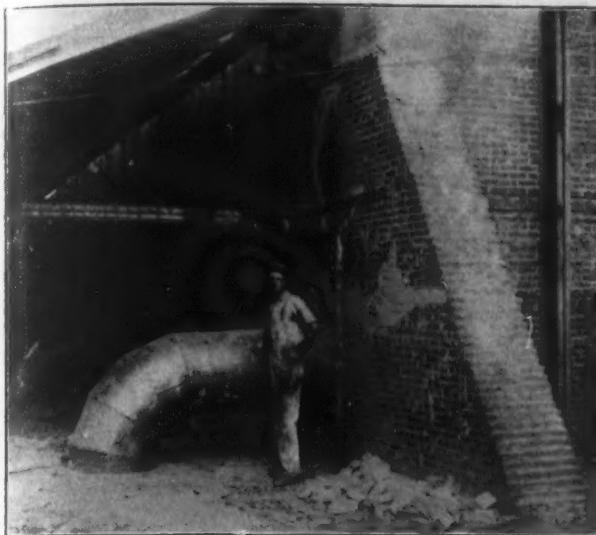


Fig. 2—Two Producers in Operation at the Legg Continuous Brick Kiln, Calhoun, Ga.

into the lower section of the producer through a sectional blast hood, *m*, which distributes the air and steam mixture uniformly over the gas making area. One of the special features of this hood is that it is renewable part by part, which reduces repair expense, while at the same time its design is such as to prevent the draft being choked by an accumulation of clinkers or ashes with the resulted deadening of one section of the fire and a consequent overburning of another section which results in lean or uneven gas being made.

This producer is made in a number of different sizes with working diameters ranging from 2 to 12 ft. and is rated conservatively for continuous operation. Among the special fields where this producer is intended to be used are in the steel industry; in glass furnaces, where the supply of natural gas formerly used as fuel has become exhausted; in brick, lime, terra cotta and cement kilns; boilers and wood distillation retorts.

#### A New Soaking Pit Cover

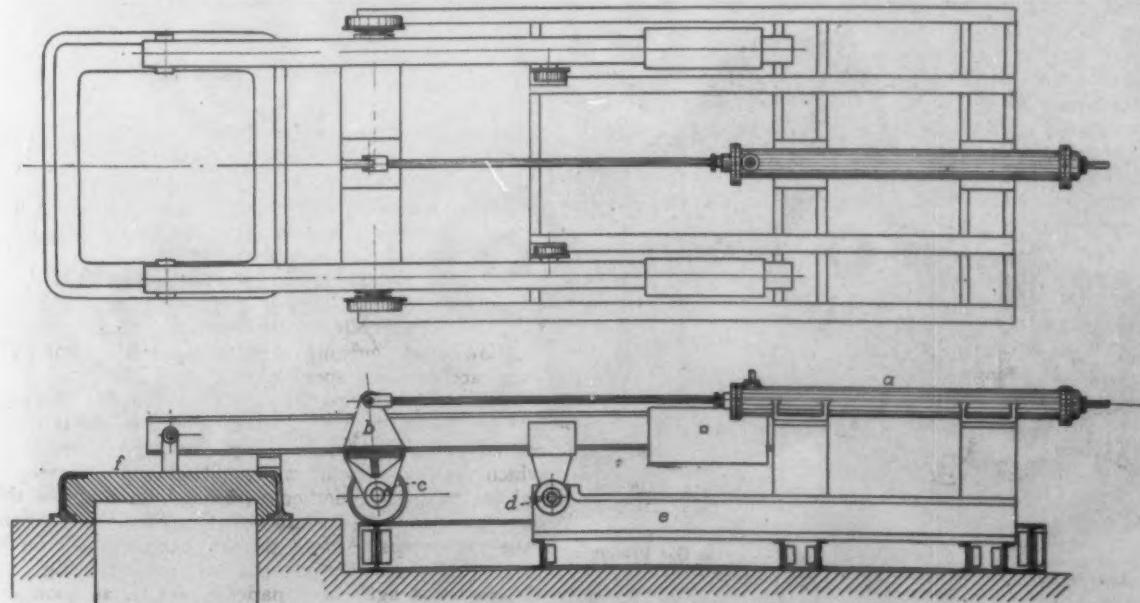
The Pittsburgh soaking pit cover embodies a number of distinctive features, the most noteworthy of which is that when the cover has to be drawn back for charging or

around the outside of the cover to keep it tight, as the cover lifts easily out of the sand and drops into it without scraping it away. It is stated also that if the top of the pit burns off the cover will follow after it and keep it tight. The construction and method of operation are shown in the accompanying cut. The hydraulic cylinder *a* acts on the lever arm *b*, thereby swinging the cover around the shaft *c*, lifting it upward. At the same time this causes the wheel *d* to drop down in the slot *e* where it is made to travel. This in turn carries the cover suspended while it is being pulled back. The cylinder itself has a by-pass, permitting a slow start while the cover is being lifted and this also permits a gradual lowering at the end of the stroke. The manufacture and sale of this type of cover have been taken up by the Schlieper-Daae Company, 714 Ferguson Building, Pittsburgh, iron and steel works engineer and contractor.

#### The Largest By-Product Coke Oven Plant in the World

H. Koppers, constructor of by-product coke and gas ovens, Joliet, Ill., has issued a large sheet giving a 24-in. panoramic view, reproduced from a photograph, of the Koppers ovens erected at Gary, Ind., by the Indiana Steel Company, subsidiary of the United States Steel Corporation. This plant is stated to be the largest and most complete by-product coke oven plant in the world. It comprises 8 batteries of 70 ovens each, making a total of 560 ovens. The capacity per charge of each oven is 12½ tons. The type is the regenerative coke oven with the Koppers direct process of ammonia recovery. The coking time is 18 hours. The daily coal consumption is 9500 net tons and the yield of coke is 84 per cent., or 8000 tons, the by-products consisting of ammonium sulphate and tar. The gas evolved daily is 95,000,000 cu. ft., of which 50,000,000 is used in the steel mills and 50,000,000 in heating the ovens. The cost of this plant is placed at \$6,000,000. The circular states that the number of Koppers ovens erected since 1902 or under construction November 1, 1911, is 7230. The repeat orders number 2727 ovens. Since the introduction of these ovens at Joliet in 1907, 1411 Koppers ovens have been erected in America.

**A New Structural Shop at Massillon.**—The Massillon Bridge & Structural Company, Massillon, Ohio, will erect a new plant on a site formerly occupied by a local rolling mill of the Republic Iron & Steel Company. It will consist of a steel building 156 x 400 ft., and an addition of 200 ft. will be added shortly after the plant starts up. The new plant will give employment to about 275 men and will double the capacity of the company's old



Plan and Elevation of the Pittsburgh Soaking Pit Cover

withdrawing an ingot it does not scrape on the top of the pit and thus in time cause serious damage to the brick work. The escape of gas is prevented by piling sand

works. City officials of Massillon have agreed to give the company \$10,000 when the new plant is finished and put in operation.

## Foundry Cold Saw

### A Recently Developed Cutting-Off Machine of the Espen-Lucas Machine Works, Inc.

Extreme simplicity of construction, easy access to the working parts, great strength for the work it has to perform and durability of the various parts were the particular features considered in the design and construction of a new steel foundry cold saw cutting-off machine recently built by the Espen-Lucas Machine Works, Inc., Philadelphia, Pa. This machine was built for export, and as it is intended for cutting off steel risers measuring 30 x 36 in. and gates 30 in. in diameter, a tool of extreme rigidity combined with high power was essential. Fig. 1 is a view of the machine, while Fig. 2 illustrates a typical casting that is handled by it.

The machine, in addition to embodying the customary standard features of the builder's line of cold saw cutting-off machines, embraces a number of additional points. This particular machine is belt-driven, having a driving pulley 36 in. in diameter and 8 in. wide, although if desired motor drive can be readily attached. The drive is through a main shaft and phosphor bronze worm and worm wheel located at the rear of the machine, and the former runs in a bath of oil. The pinions and the pinion shafts together, with the main spindle, which is 8 in. in diameter and 36 in. long, and the gears are made in single pieces cut from solid forgings. All of the gears are incased in suitable covers and the important bearings are of the roller type.

The saw blade, which is said to be the largest in diameter of any used in steel foundry work in connection with the cutting of solid sections, is 1½ in. thick and is attached to the main spindle by six 2-in. countersunk bolts. A feed of 40 in. is provided for the machine carriage by the builder's standard ratchet mechanism operating through a long screw. There is a quick forward movement through tumbler gears to bring the saw blade up to the work, while for withdrawing the blade a quick return is available. This is obtained by a friction plate clutch operated by a hand lever. An automatic stop for controlling the depth of the cut at any point is provided. The range of feeds is from 0 to 6 in.

Accessibility of the working parts is one of the special features of this machine. Removing the cast-iron bracket at the driving end of the machine enables the principal internal working parts to be withdrawn through that end so that repairs and renewals can be easily and rapidly made.

A supplementary table 42 in. wide, 36 in. high and 60 in. long is furnished in addition to the regular table provided on the bed of the machine. This supplementary table is held in position on foundation rails on a cast-iron base by T bolts and can be moved toward or away from the main table as may be desired by a hand screw feed.

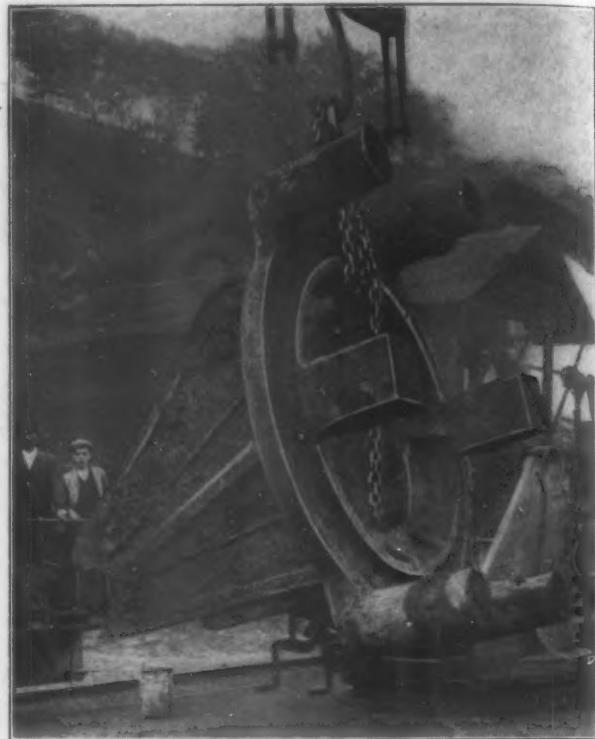


Fig. 2—A Typical Casting Ready to Be Cut by the Machine

Both of the tables have T slots for holding the work in position.

In operation steel bars 6 in. in diameter have been cut in 1½ min., 9-in. bars in 3½ min. and 12-in. bars in twice that time. Steel sections 10 in. square have been sawed apart in 5 min.

The labor journals in Great Britain report a falling off in the number of the unemployed as reported to them by trade unions, showing that industry is improving.

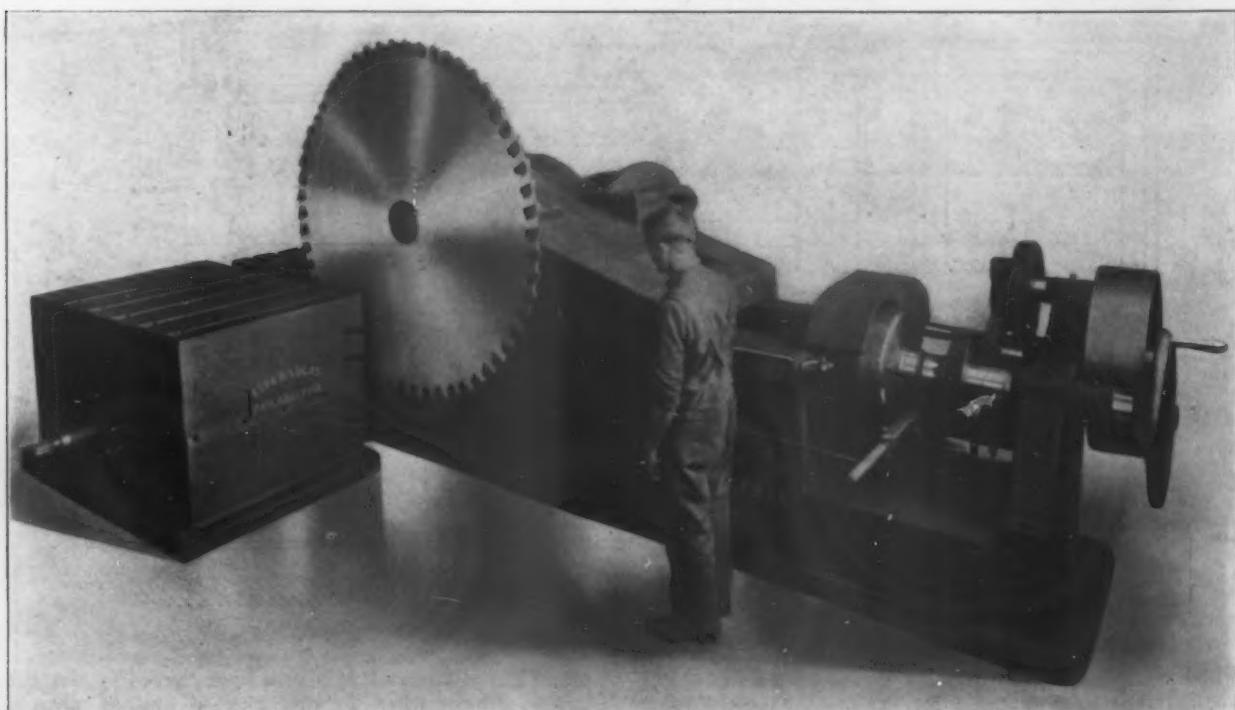


Fig. 1—A New Steel Foundry Cold Saw Cutting-Off Machine Built by the Espen-Lucas Machine Works, Inc., Philadelphia, Pa.

## Accidents in German Iron and Steel Works

### A Digest of Recent Government Reports

The German Imperial Insurance Office makes a practice of issuing at 10-year intervals special studies of the salient facts regarding industrial accidents. The principal object of these studies is to indicate the possibilities of improvement in the prevention of accidents as well as the best medical and surgical treatment of the injured workmen for the purpose of restoring the largest possible measure of their earning capacity. The first two reports were based on data secured in 1887 and 1897, and the last, the contents of which have just become available, upon information obtained in 1907.

#### Accident Rate for Iron and Steel Workers Comparatively Low

As regards the iron and steel industry, this study of industrial accidents included 40,276 iron and steel manufacturing establishments having a total of 1,211,881 full-time workers who were under the national workingmen's industrial insurance law. The industry, as compared with other branches of mining and manufacturing, shows a comparatively low accident rate. Nine other industries—teaming, hauling, flour milling, mining, quarrying, woodworking, brewing, engineering, construction work, and inland navigation—have a higher accident liability for each 1,000 employees. When the iron and steel industry is considered independently, however, an increase in the accident rate for each 1,000 wage-earners becomes evident.

Of the total number of iron and steel workers studied, accidents of all kinds were reported for 97.26 workmen out of each 1,000 employed in 1907 and 84.87 for each 1,000 employed in 1897. The proportion of iron and steel workers, however, actually killed or who underwent a disability of 13 weeks duration in 1907 was 11.62 as compared with 8.92 in 1897. Of the adult iron and steel workers 12.24 males and 5.36 females for each 1000 employed were injured. In the case of employees under 16 years of age, 6.08 boys and 5.18 girls in each 1000 met with accidents. The increase in the accident rate in German iron and steel plants for all employees may be readily seen in the comparative statement below which shows for the period 1897-1907 the number of persons killed or injured for each 1000 employed.

Number of Full Time Workers Killed or Injured per 1000.

Year.	Year.		
1897	8.92	1903	11.25
1898	9.76	1904	11.62
1899	10.05	1905	11.45
1900	10.07	1906	11.55
1901	11.39	1907	11.62
1902	11.45		

#### Causes of Accidents

The largest proportion of males, both men and boys, had the highest accident rate in boiler and engine works, blast furnaces, structural iron and steel plants and machine shops. The female employees were most frequently injured in engine and sheet iron works and blast furnaces. The highest proportion of all accidents in all industries was caused by machinery. In accidents of this kind the iron and steel industry, which had 25 per cent. of the total number, showed a higher proportion than any other industry. The proportion of workmen in iron and steel plants meeting with accidents from specified causes in 1897 and 1907 was as follows:

Per Cent. Killed or Injured by Specified Causes

	1897	1907
Motors, engines, etc.	2.34	0.87
Transmission apparatus	1.85	1.24
Working machinery	26.00	23.49
Elevators and hoists	6.63	8.52
Steam boilers	0.35	0.19
Explosives	0.17	0.15
Inflammable or hot substances	6.99	6.77
Collapse of objects	9.44	9.82
Falls from ladders, etc.	7.57	8.17
Loading and unloading materials	14.83	16.10
Operation of railroads	4.26	6.45
Tools, hand apparatus, etc.	4.16	5.65

As regards the results of the injuries in terms of loss of earning power to the employee, about 6 per cent. of the wage-earners injured in the iron and steel industry in 1908

died and the injuries of about 1 per cent. of those meeting with accidents resulted in permanent disability and loss of earning power. Two-fifths of the injuries resulted in partial permanent disability with a loss of earning power from 25 to 75 per cent. Almost one-half of the accidents were followed by a temporary disability of the wage-earners and a loss of earning power of 25 to 75 per cent. during a short period of time. In the case of a small proportion, about 8 per cent., of the iron and steel workers injured there was a temporary disability but no loss of earning power.

#### Duration of Disability

According to the German system, compensation for accidents is paid in the form of annuities or pensions during the period of disability. The wage-earner, however, who has met with an accident must undergo an examination at intervals during the receipt of his pension and the amount paid to him annually is increased or decreased by the decision of the examining board as to any increase or decrease in his earning power. If the condition of the workman with the lapse of time becomes worse, he is entitled to make request for an increased pension. On the other hand, if he improves, the employers' associations may ask for a decrease in his annual pension.

This system of periodical examinations throws much light on the duration of disability and on the effect of industrial accidents in reducing the earning power of the workmen. Of the 15,012 iron and steel workers injured in 1907 25 per cent. ceased to receive pensions after an interval of one year, because of complete recovery of earning power. In 1906 38 per cent. returned to work with full earning powers restored after receiving a pension for three years, and, in 1904, 44 per cent. of the injured employees after having had a pension for four years recovered their earning powers completely. After an interval of five years 2 per cent. of the injured iron and steel workers still are being paid pensions because of a loss of 75 to 100 per cent. of their earning power; 3 per cent. because of a loss of earning power of 50 to 75 per cent.; 10 per cent. on account of a loss of earning power between 25 and 50 per cent., and 35 per cent. of those injured are receiving pensions after a period of five years because of a loss of less than 25 per cent. of their earning power.

#### The German System of Industrial Insurance

Under the German system, mutual associations of employees administer the accident insurance. These mutual organizations of employers make provision only for those accidents which result in death or in disability lasting longer than 13 weeks. Another system has charge of accidents or sickness causing disability for a shorter period than 13 weeks. The accidents referred to in the preceding discussion are only those administered by the employers' association, or, in other words, those which caused death or a loss of earning power for a longer period than 13 weeks.

The employers' accident associations pay the cost of accident insurance by assessments on the amounts of their payrolls, modified by a system of risk rating based on the number of accidents occurring in the various plants. Consequently it is to the interest of each employer to adopt all possible means for the prevention of accidents. Furthermore, since the injured workman receives compensation during the entire period of his disability, any improvement in his physical condition results in a decreased pension to him and a corresponding reduction in the outlay of employers. The mutual associations of employers have consequently been led by their own pecuniary interests as well as by humanitarian considerations to make heavy appropriations for the purpose of preventing accidents and in the medical treatment of injured workmen. In 1907 the outlay of all kinds of associations for medical expenditures had increased to \$505,250, as against \$237,747 in 1897. During the same period the expenditures for preventive measures had increased from \$246,769 to \$355,400.

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The Standard Oil Company's pension system for employees, which has been in force for many years, will not be affected by the recent disintegration. It has always been managed by the subsidiary companies for their respective employees, so that the new order necessitates no change in its operation. Payments under the plan have been carried as current charges against earnings.

## Motor Trucks\*

### Can They Be Adapted to the Foundry Trade?

BY C. R. HOYMET

Before this question can be answered, there are a number of conditions that must be investigated. We must first determine the length of the hauls; second, the general condition of the foundry transportation department; third, the amount of material handled; fourth, the present cost of transportation. We can then determine whether motor trucks can be utilized in a particular foundry business to an advantage.

The Midvale Steel Company started the ball rolling by placing one 3-ton truck in its department for the hauling of car wheels, tool steel, billets and general castings to its downtown customers. This was previously done by hired teams. This truck to-day is doing the largest part of the company's hauling. The Tioga Steel Company is also using a truck of 5-ton capacity, which is being operated at a much lower cost than that of the old-style method, making from two to three trips a day more than could ordinarily be done with the work of four horses, which proves again that the motor truck can be utilized in the foundrymen's trade.

#### Choice Between Electric and Gasoline Trucks

Motor trucks to-day are manufactured with capacities from 1,000 lb. to 10 tons, both in the electric and the gasoline power. This brings up a point that is well to be considered right here: that electric trucks can be utilized to better advantage in a great many instances than gasoline trucks. We will take, for instance, the foundry that hauls about, say, three miles from its plant and having a great many stops. An electric truck can be then used more economically than a gasoline truck, as the distance covered is not particularly great and the many stops naturally require time for starting and increased use of fuel. This illustration does not necessarily mean that electric trucks can be only used for a three-mile trip, but it is merely to show that they are to be preferred for some classes of service.

The electric truck is the logical choice for some classes of city service by reason of the fact that the roads to be traveled are usually passable. The better the roads, the better the performance of the car, for it must be borne in mind that the electric truck is, in a sense, limited. Hard roads pull down the batteries, which feature does not have the same effect in gasoline cars, where sufficient fuel can be carried for a long run.

We have looked at the transportation problem from the short-haul standpoint. Now in taking up the question where the gasoline truck can be utilized, I would say that where you have a long freight haul a gasoline truck would naturally be the power to use, or where you have hauls to the suburbs and nearby towns where the roads are hilly, muddy and sandy.

In investigating your transportation department it will often be found that neither the electric nor gasoline truck can compete with horses. Take, for instance, a foundry situated three blocks from a railroad siding; the double team could then be utilized to a better advantage than either of the trucks mentioned, as the length of the haul is not beyond the ability of the horse and the investment is much less for the short distance.

#### A Preliminary Investigation Needed

As a motor truck representative, I believe that before a business man buys a truck he should compile figures showing the average cost of hauling his material or finished product per year, then find out whether his particular work calls for an electric or gasoline truck, comparing the cost of up-keep of the two latter modes of transportation with that of his present cost, taking in consideration the increased service and the possibilities of new business. I have seen instances where business houses have installed motor trucks of five-ton capacity where requirements call for three-ton. This is a big mistake and is a matter that

business men should consider seriously. The right truck in the right place, operated with a degree of care, certainly cannot help but be economical.

The construction of a good motor truck should be as follows: A four-cylinder motor with ample power to pull the load at a speed of 10 to 15 miles per hour over all kinds of roads; good, substantial transmission with heavy enough gears to stand the strain and shocks of the average cobblestone street and rutty roads; a clutch that can be engaged freely and gently so as not to strain the motor or transmission; the right kind of jackshaft, preferably of the full floating type; substantial frame with enough resiliency to give with the condition of the road bed; large tires, heavy springs, yet resilient enough to carry the load as easily as possible; wheels necessarily of heavy construction; the axles, both front and rear, preferably of solid composition to withstand road shocks.

The tire problem seems to be the bugaboo in economical up-keep of a motor truck at this time, but there is no doubt that this will be overcome in a few years.

#### Cost of Up-Keep

Nothing has been said as to the general cost of up-keep of motor trucks, and it might be well to dwell upon this point to show or to outline the general estimated cost of operating a three or five-ton truck for the period of one year on a basis of 50 miles per day. First, we must consider the initial investment. Assuming that a three-ton truck for the chassis only cost \$3,500 and body \$250, the complete investment would be \$3,750. We must now figure on the fixed charges per year.

Interest on the investment at 6 per cent. a year.....	\$225.00
Depreciation of body at 20 per cent. per year.....	50.00
Storage, including washing, polishing and inspection....	300.00
Driver's wages at \$15 a week.....	780.00
Insurance; fire, \$99; liability, \$80; property, \$32; collision, \$108; total .....	319.00
Annual expenditure for overhauling, renewing of worn parts, which make life of car indefinite.....	500.00
Total fixed charges per year.....	\$2,174.00
Total fixed charges per day, practically.....	\$6.00

The operating charges would be as follows:

Gasoline at 8½ cents per gal., operating 7 miles to the gal..	\$0.0121
Oil at 30 cents per gal., operating 200 miles to the gal....	0.0015
Tires at approximately \$470 a set, 8,000 miles guaranteed..	0.0587

Total cost per mile .....

\$0.0723

Cost on a basis of 50 miles per day.....

\$3.6150

These figures are approximate and give you an idea as to what it costs to operate a truck of that capacity.

The capacity of trucks that could be economically used in the foundry business would be those of one to five tons and the cost of operating is proportionately according to the capacity and investment. The average cost of a one-ton truck is \$2,150; two-ton, \$3,000; three-ton, \$3,500; four-ton, \$4,000; five-ton, \$5,000.

The tire companies guarantee tires on the larger trucks from 8,000 to 10,000 miles, depending largely upon the route they cover, loads they carry, etc.

#### The Operator

The question of the operator should be considered very seriously, as the general cost of up-keep, length of time out of service, depreciation and tire expense largely depend upon him. Experience has shown that it is a great deal cheaper to put on a man of some mechanical ability and to pay him, say, from \$15 to \$18 a week, than to get a cheap man for \$9 a week who knows absolutely nothing about machinery. The latter man will be a ceaseless worry to the owner, often operating the truck without the proper lubrication and attention that a piece of machinery doing this kind of work must have.

The motor truck must have a certain amount of attention. It requires rest like a human being. The truck that is operated day in and day out without attention will soon end up in the junk heap.

Another matter that is very important in connection with the use of motor trucks by foundrymen is the construction of the body. Experience has shown that a substantial platform lined with sheet steel, built as close to the ground as possible, has proved the most satisfactory, as there is a tendency when loading the truck with heavy castings to block them, nailing them to the floor boards of the body, which would soon crack it and put it out of commission. The use of the steel covering allows the loading

\*From a paper read before the Philadelphia Foundrymen's Association, December 6.

†Sales manager of the Motor Truck Company, Philadelphia.

to be done much quicker and better, as it is very much easier to move a heavy casting over a smooth surface.

#### A Power Winch

One of the most useful accessories that can be applied to commercial cars for such work as the loading of heavy machinery and castings is the power winch. The cost of a power winch is considered a little high, but the disregard of power winch efficiency from the standpoint of increased cost of the equipment alone is very shortsighted. To one who has made a study of commercial cars, their application and use, some of the present-day methods of handling loads are farcical. Why kill oneself moving a load when under the hood is a husky four-cylinder motor that can do the trick in the turn of a handle? The power winch can be used in any number of cases where loads are bulky and heavy, the shifting of which would consummate time and mean strenuous human effort. There is a limit to human endurance, whereas the winch, when properly cared for, can go on doing the work without a skip. The winch can be operated either by turning a crank or operated directly from the motor, either for hoisting or unloading. The operating of a motor truck equipped with this device will often save a good many hours at both ends.

In summing up the entire motor transportation problem, I would say that where a business firm is using two or more horse wagons, transporting its materials from points to exceed one mile, the motor truck could be utilized, if the problem is worked out from every point, and if each concern that adopts the motor truck should operate it with the proper system, giving it the attention that all machinery must necessarily have, there is no question that it will show on the profit side of the ledger and have a tendency to increase the dividends.

#### The Allis-Chalmers Company to Reorganize

In connection with the proposed reorganization of the Allis-Chalmers Company, which the directors are considering, a protective committee of the company's 5 per cent sinking fund bonds has been organized. The committee consists of James N. Wallace, president Central Trust Company, chairman; R. Walter Leigh, of Maitland, Coppell & Co.; Charles W. Cox, of Robert Winthrop & Co.; Fred Vogel, Jr., president First National Bank of Milwaukee, and John R. McClement. F. L. Babcock is the secretary, at 54 Wall street, New York. The Central Trust Company, New York, is to be the depository of the bonds.

The directors, it is stated, propose to put the company on a more substantial basis financially and physically, but some time must elapse before the details can be worked out. It is said that a receivership will not be necessary. The company has a capitalization of \$50,000,000, of which \$19,820,000 is common and \$16,050,000 preferred, and \$11,148,000 first mortgage bonds are outstanding.

The first step in effecting the contemplated reorganization will be taken by securing the funds needed to provide on January 1 for a semi-annual bond interest of \$287,000, interest on floating debt amounting to \$130,000 and a guarantee of \$31,500 dividends on the stock of the Bullock Mfg. Company, as well as for additional working capital with which to reduce the floating debt and to enable the company to accept such business as may be offered to it. In order to secure the funds thus needed, the directors have decided to co-operate with the other stock and bond holders and will form special committees and sub-committees through which to conduct the reorganization.

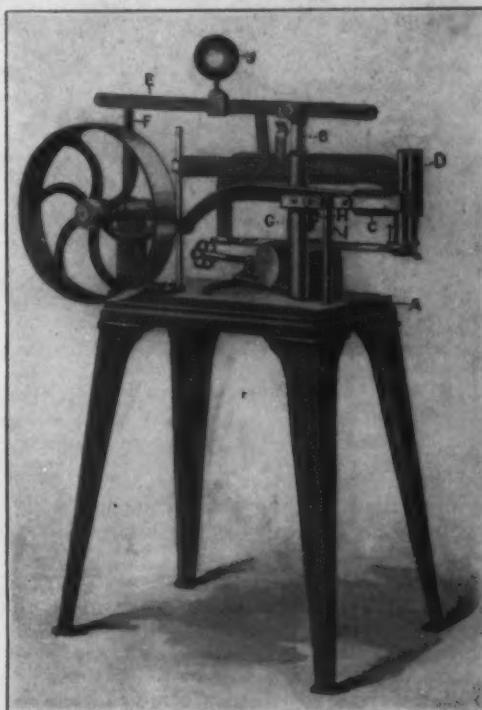
No dividends on the preferred stock have been paid since 1904, and although there was a surplus of \$1,117,161 earned in 1910 fixed charges were not earned in the last fiscal year owing to the slack demand for heavy machinery, which is the company's principal product.

With but one month still to be heard from in 1911, the gross sales of the Western Electric Company promise to total between \$66,000,000 and \$67,000,000 this year. Last year the gross sales totaled \$61,000,000 and in the preceding year \$46,000,000, while 1906 holds the high record with \$69,000,000.

The lockout of metal workers in Germany, which began November 30 and affected between 50,000 and 60,000 men, ceased December 6. A compromise was arranged.

#### Improved Power Hack Saw Machine

Small floor space, reduction of friction and the firm supporting of the saw frame and the saw guide to give a true vertical cut are some of the special features claimed for an improved power hack saw marketed by L. H. Olmsted's Sons, Hasbrouck Heights, N. J. Other special features of the machine are ability to swivel the work with a pointer or indicator running over a graduated segment to indicate the various angles and a low power consumption. In this machine the hack saw is secured in a frame which is reciprocated horizontally by a revolving crank and a connecting rod. The bed piece A supports a column, B, which is embraced by a vertically adjustable sleeve, G. The horizontal slideway upon which the saw frame slides is fastened securely to this sleeve. The head C moves on a slide that is supported by the post I and extends



An Improved Power Hack Saw Machine for Sawing Metal Built by L. H. Olmsted's Sons, Hasbrouck Heights, N. J.

into a deep vertical groove D in the saw frame. This head is connected with the crank by the connecting rod so that when the machine is in motion the movement of the saw frame is the same irrespective of its height above the table. The saw guide H is attached to the adjustable sleeve G close to the work and is adjustable in all directions. This arrangement, it is emphasized, prevents the saws from breaking and at the same time assures a true vertical cut in the work. The stud upon which the saw is hooked in the reciprocating frame holds the blade in a vertical position at all times without adjustment.

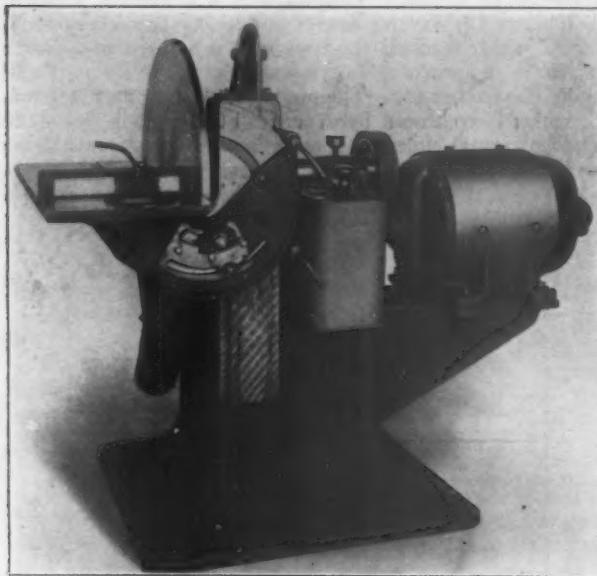
The lowering and raising lever E, the starting lever F and the wheel controlling the adjustment of the vise jaws are conveniently located at the front of the machine. The ball weight J can be adjusted on the lever controlling the position of the saw frame to give any desired pressure and is held fast in position by turning the ball. No counter shaft is required for operating the machine, a clutch operated by the lever F for starting and stopping the saw being attached to the machine. In this way it is possible to locate the saw under a main line shaft and drive it by belt connection from one of the overhead pulleys.

Three sizes of saw having capacities for stock 2, 3 and 4½ in. square respectively are built.

The grand prize for the exhibit of abrasive materials has been awarded by the Jury of Awards of the Turin Exposition to the Carborundum Company, Niagara Falls, N. Y. The exhibit showed a complete line of Carborundum wheels, Aloxite wheels, Carborundum dental wheels, Carborundum sharpening stones and razor hones of all descriptions.

### Motor-Driven Disk Grinder

Recently the Gardner Machine Company, Beloit, Wis., has equipped its No. 17 patternmaker's disk grinder, which was illustrated in *The Iron Age*, August 17, 1911, with a new motor drive. The special advantages of this drive are the elimination of end play in the spindle due to the



The No. 17 Motor-Driven Patternmaker's Disk Grinder Built by the Gardner Machine Company, Beloit, Wis.

mounting of the motor apart from the grinding spindle and driving the latter through gears and the ability to operate the grinder in shops not equipped with a dust exhausting system by belting a small fan directly to the machine spindle.

It will be noticed from the accompanying engraving that the motor is mounted separately from the grinding spindle, which is said to overcome the end play of the spindle carrying the disk wheel. It is pointed out that where a motor is mounted so that its amature shaft acts as the spindle of the grinding machine end play is bound to result since the shaft should have end play to secure magnetic balance and consequently the disk wheel would have the same amount of play.

The drive is through spur gears, the pinion being of rawhide. A semi-inclosed guard covers these gears but if desired a fully inclosed cover can be furnished so that the gears can run in oil. The controller is attached to the front of the machine and offers a convenient and compact arrangement, since the machine can be started or stopped by the operator without leaving his working position. The size of motor required is 5 hp. and it can be used with either alternating or direct current.

A dust box in the base of the machine enables the grinder to be used in pattern shops not equipped with exhausting systems, or where the machine is placed in an isolated part of the factory, as a small exhaust fan can be belted to the machine spindle and blow the dust into this box.

### Proposed Federal Compensation Bill

The Federal Employers' Liability and Workmen's Compensation Commission has prepared a bill for submission to Congress which, in effect, abolishes the present common law and statutory liability for the personal injury and death of employees in the service of interstate railroads, and substitutes definite compensation in all such cases, irrespective of negligence.

The employer is to furnish medical and surgical aid, not to exceed \$200, in all cases of injury.

In case of total and permanent disability the employee shall receive 50 per cent of his wages during the remainder of his life. In case of the loss of one arm, a leg or one eye he is to receive 50 per cent of his wages for a term of years extending from 30 months to 72 months. For temporary

total disability he is to receive a like amount during the continuance of the disability; for temporary partial disability 50 per cent of the impairment of his earning capacity.

Payments are to be made monthly. In case of death periodical payments are to be made to the widow, children or dependents.

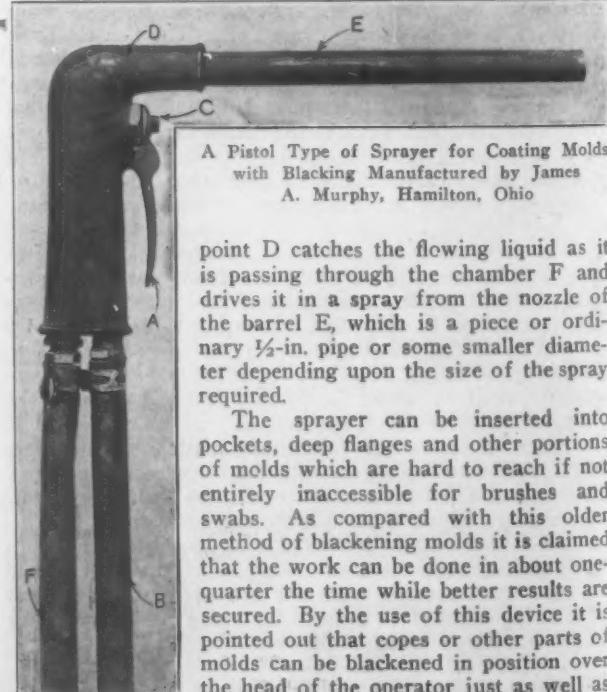
Provision is made for settling controversies by agreement or by committees. In default of such settlement the district judge is to appoint an adjuster, who is to be a salaried officer of the United States. His findings are to be filed in the district court, and unless excepted to automatically become a judgment of the court. If each party excepts within 20 days the case is to be tried and determined by the court, provision being made for a jury trial upon demand.

### The Murphy Mold Sprayer

For spraying blacking on molds an ingenious device has been invented by James A. Murphy, foundry superintendent of the Hooven, Owens Rentschler Company, Hamilton, Ohio. Some of the special advantages claimed for the sprayer are light weight, trigger control, economy in the use of air and ability to blacken parts of molds easily regardless of their position.

As will be noticed from the engraving the sprayer is of the pistol type and is made of bronze and iron. The valve is bronze resting on a cast iron seat with a pressure of the air behind the valve. The intake and the suction holes are made larger than are really necessary so that reducers can be inserted to which the lines of holes fasten. This arrangement concentrates all the wear from the coupling and uncoupling of the hose on the reducer and when the threads of this part are worn away it can be thrown away and a new one inserted at a trifling cost.

When the trigger A is pulled air is brought in from the air hose through the branch B and rushes through the valve C. It travels at greater velocity through a small orifice in the portion of the sprayer designated by D where it expands. Its further expansion in the barrel E creates a suction in the chamber F to which the suction hose is attached. The air coming through the orifice near the



A Pistol Type of Sprayer for Coating Molds with Blacking Manufactured by James A. Murphy, Hamilton, Ohio

point D catches the flowing liquid as it is passing through the chamber F and drives it in a spray from the nozzle of the barrel E, which is a piece of ordinary  $\frac{1}{2}$ -in. pipe or some smaller diameter depending upon the size of the spray required.

The sprayer can be inserted into pockets, deep flanges and other portions of molds which are hard to reach if not entirely inaccessible for brushes and swabs. As compared with this older method of blackening molds it is claimed that the work can be done in about one-quarter the time while better results are secured. By the use of this device it is pointed out that cores or other parts of molds can be blackened in position over the head of the operator just as well as if they were laid on the floor, while at the same time, the amount of waste blacking is reduced. The force with which the blacking is thrown against cores or molds forces the wet material into the pores of the facing sand where it is retained and gives a greater depth of fireproof coating with less material. Blacking put on in this manner will not, it is said, flake off cores or molds on account of the hold it has among the pores of the sand as a result of the force with which it is applied.

## Engine Lubrication

In order that small plants can secure the benefit of the scientific lubrication employed in large central stations and power plants, the Richardson-Phenix Company, Milwaukee, Wis., has designed and is now manufacturing an individual oiling system. The special advantages of this system are that the various pipes, receivers, filters, pumps, etc., can be located either upon or very close to the engine. With a view to making it easy for the engineer to equip his engine with this automatic lubricating system it has been brought to such a state of perfection that all the information required is the horsepower of the engine and its

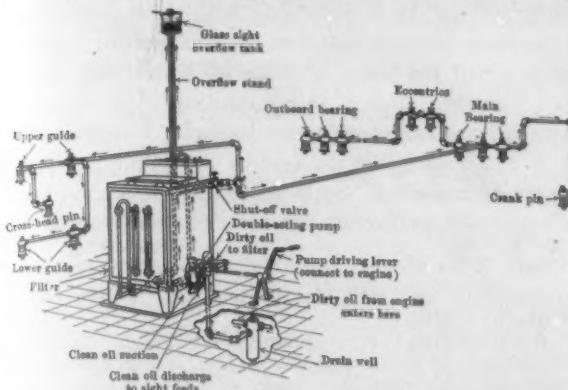


Fig. 1—Diagram Showing the Location of the Apparatus Required by a 14-Point Richardson Engine Lubricating System Made by the Richardson-Phenix Company, Milwaukee, Wis.

type and make. With this data in its possession the company is in a position to supply a complete system with all the necessary appurtenances which can be readily attached to the engine by an ordinary mechanic. This has been brought about as the result of considerable experimenting and careful study of the standard makes of the different engine manufacturers. Two standard systems are now being built known as the Richardson system and the Phenix system, which are illustrated in Figs. 1 and 2 respectively.

The former system is designed primarily for large Corliss engines and is furnished in various sizes for lubricating engines of from 100 to 1500 hp. and with filters having an hourly capacity of from 4 to 35 gal. The other system which is intended for engines of smaller sizes, namely, 10 to 200 hp., is built in a number of different sizes and has a correspondingly reduced filtering capacity, the maximum being 4 gal. In general the essential parts of

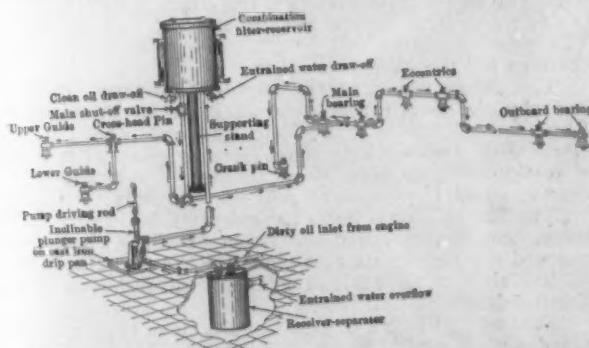


Fig. 2—Apparatus and Material for a 10-Point Phenix Individual Oiling and Filtering System

these two systems are identical, although their details vary slightly. These individual systems are designed as units so that all parts fit together and operate satisfactorily. The filter and the pump have the right capacity for a particular number of feeds and the necessary amount of piping is supplied for each type of engine. The use of a novel device known as the Union-Cinch fittings is said to eliminate all trouble from pipe fittings in connecting up either of the two systems.

In both systems at each point of lubrication a sight-feed oiler is provided so that the amount of oil fed to that particular bearing can be accurately adjusted regardless of the amount of lubricant supplied to all of the others. The

gauge glass in each feed provides a means by which the attendant can see just exactly how much oil is being fed. The scheme of operation of these systems is to collect the used oil from the various points of lubrication in a suitable receptacle. This reservoir is located at some point so that all the oil flows into it by gravity and is pumped from there to the top of the filter. After all the impurities and any entrained water have been removed in the filter the oil either flows by gravity as is the case in the Phenix system or is forced by a pump driven by the engine to the various feeds.

The installation of these systems is claimed to reduce the steam consumption of the engines from 2 to 20 per cent. from that required when hand oiling is employed, and it has been figured out that the minimum reduction in the amount of steam consumed which it is pointed out is due to a decrease in the amount of power consuming friction is sufficient to pay for the necessary oiling system in one year. Another point upon which the maker lays special emphasis is the lessened oil consumption which is said to be not less than 40 per cent. and may run as high as 75 per cent.

## The N. & G. Taylor Company's Improvements

Contracts have been let by the N. & G. Taylor Company of Philadelphia, manufacturer of tin plate, for the erection of a complete tin house at its plant at Cumberland, Md. The Cumberland plant has hitherto produced black plate only, which has been tinned at the company's Philadelphia works. The new addition will comprise the latest ideas in tin-house construction, especial attention having been given to ventilation, lighting and the mechanical transportation of materials within the building. A new electric generating set is being added to the power plant. The present laboratory is being doubled in size, and a large warehouse for the storage of black plate will adjoin the new tin house.

With the completion of these improvements and additions, the N. & G. Taylor Company will pursue at Cumberland every process of the manufacture of tin plate. Open-hearth furnaces will convert pig iron, scrap and ore into steel; the steel ingots go through the large blooming and bar mills and emerge as sheet bars; these in turn are rolled into thin sheets in the two black-plate mills, and the dipping and finishing will follow in the tin house. Coincident with the commencement of these improvements comes the announcement that the Cumberland City Council has granted the company free water to the extent of 200,000 gal. a day and immunity from taxes for the period of 10 years.

The N. & G. Taylor Company is the oldest house in the tin-plate business in America, having been established in 1810, and therefore entering next year on its 103d year of continuous business activity. It is among the largest tin plate makers in the country. In the early days the company imported its tin plate from Wales, but since 1892 has operated its own tinning works at Philadelphia, drawing the supplies of black plate chiefly from the Cumberland plant. The company is well known by its specialty, the Target and Arrow brand of roofing tin, formerly known as Taylor Old Style, and its high-grade bright plates for special purposes. With tinning facilities at Cumberland as well as at Philadelphia, the company is now in position to compete in markets heretofore beyond its reach by prohibitory freights. Work on the new construction is being pushed actively and it is expected to be in operation within three or four months.

**The Cross Creek Coal Company.**—George Z. Hosack, vice-president of the Pittsburgh Coal Company, will retire January 1 to form a new coal company, of which he is to be the president. It will operate in Washington County, Pa., will have a capital stock of \$250,000 and will be known as the Cross Creek Coal Company. The headquarters will be in Pittsburgh. The company owns 1700 acres of coal land south of Burgettstown, near the village of Cross Creek. Work has been started on the shaft. Mr. Hosack has been in charge of the operating department of the Pittsburgh Coal Company since its absorption of the New York & Cleveland Coal Company, of which he was president.

## The Machinery Markets

The nearness of the holidays is the prime cause of a general state of quietness in the machinery field. Little complaint is heard, as it is admitted that the season does not call for great activity. At the same time the volume of small orders has continued good. The taking of inventories and making of plans for 1912 are engrossing much of the attention of machinery users. Buying naturally is expected to come later. In New York and elsewhere anticipation of buying by the railroads does much to keep the trade cheerful. A list of good size is expected from the Delaware & Hudson in a week or ten days and another from the Delaware, Lackawanna & Western in the near future. Chicago reports considerable activity, specifying one sale of \$15,000 worth of equipment, also sales of large tools for heavy duty. The South shows a continuation of favorable conditions and business there seems unaffected by the approaching holiday season. New England dealers are much encouraged by their November business, but are not over busy at present. Philadelphia conditions resemble those in New York. Detroit has had the usual booking of single tool orders and some good inquiries are out for next year's business. Cleveland has a fair volume of live inquiries pending which probably will not be closed this year. Cincinnati has had some minor inquiries from the New York Central Lines and its export business continues good. St. Louis, like the rest of the country, reports a good run of small orders. On the Pacific coast the feature of trade has been a movement of second-hand equipment. The coast has had some business from the railroads and conditions are somewhat improved.

### New York

NEW YORK, December 13, 1911.

With the approach of the holidays, inventory taking and the time when many enterprises formulate plans for the new year, the machinery market is quiet, yet with a total volume of sales that is not unpleasing. It is pointed out, however, that trade could be much better. The demands are scattered and from widely diversified industries. The greatest interest is centered in probable developments of the near future. The Delaware, Lackawanna & Western and the Delaware & Hudson railroads have not issued their lists of requirements previously referred to. That of the Delaware & Hudson is expected within a week or ten days, as it is understood to be in the hands of the road's purchasing agent. The tools required are for the new shop at Watervliet, N. Y. The Delaware, Lackawanna & Western list is also expected at an early date. The new York Central and the Pennsylvania railroads have purchased a few machine tools but not enough to arouse more than passing interest. Ship yards on the Atlantic seaboard are busy, and New York machinery men believe that business may be looked for from that source in the not distant future as a result of the stimulation of shipbuilding in preparation for the opening of the Panama Canal. Industrial plants, through extensions and new building, are contributing fairly well to the general machinery trade.

D. Auerbach & Sons, candy manufacturers, 339 West Thirty-ninth street, New York, have begun the erection of a new plant at Eleventh avenue and Forty-sixth street. The building will be 200 x 200 ft., 11 stories, of fire proof construction. The power plant will include 2500 hp. in boilers, and as the machinery is to be electrically driven 1100 kw. in electric generators will be provided. The machinery requirements besides the power plant include elevator equipment, ice machines, and a complete line of candy making machinery.

The Brooks Typeline Casting Machine Company, New York, has been incorporated with \$25,000 capital stock to manufacture type setting and type casting machinery. Byron Brooks, 111 Broadway, George H. Cook, 74 Broadway, and William T. Hoornagle, all of New York, are the incorporators.

Fire covering almost a block destroyed the paper box factory of the James Leo Company at Colden and Varick streets, Jersey City, N. J., December 4. The company, pending the adjustment of its losses, will equip temporary quarters at 111 First street, Jersey City, for the manufacture of its products. It is not yet determined whether the old site will be used or a new location selected for a new plant.

The Niagara Searchlight Company, Niagara Falls, N. Y., has been incorporated with \$25,000 capital stock. The company is equipping a building at Third and Falls streets for the manufacture of electric lights, fixtures, lamps, etc. The officers of the company are Robert H. Gittins, president; R. Ross Gessford, vice-president and R. Max Eaton, secretary-treasurer.

The Hardman Tire & Rubber Company, Belleville, N. J., has had plans prepared for an addition to its

power plant and will install two new boilers and an engine of 250 hp.

Additions and enlargements are being made to a number of factories and manufacturing plants at Falconer, an industrial suburb of Jamestown, N. Y. Among the companies which have recently started work or are soon to begin work on such additions are the following: Odsonia Worsted Mills, Falconer Mirror Company, Lyndon Mirror Company, Elk Furniture Company, Supreme Furniture Company, Queen Mfg. Company, Jamestown Mantel Company and Chautauqua Planing Mill Company.

The New York Radiator Company, Utica, N. Y., is taking figures for a foundry building, 80 x 118 ft.; a machine shop 75 x 80 ft., two stories, and a warehouse 65 x 218 ft., two stories, all of brick and hollow tile, which it will erect on Turner street, that city.

A boiler house and laundry building, 43 x 120 ft., one story, is to be built and equipped by the Vassar Brothers Hospital, Poughkeepsie, N. Y.

The Beechnut Packing Company, Canajoharie, N. Y., is preparing plans for an addition to its plant, to be of reinforced concrete construction.

The Little Falls Felt Company, Little Falls, N. Y., has plans under way for the erection of a brick addition to its present plant.

The North Buffalo Hardware Foundry, a newly incorporated concern at Buffalo, N. Y., with temporary office at 28 Erie street, has completed plans for and will build and equip immediately a one-story foundry building 65 x 250 ft. at Hertel avenue and the Erie Railroad. The new company will specialize in small gray iron castings for the hardware trade.

The Augustine Rotary Engine Company, Buffalo, has completed a three-story addition to its plant at Elmwood avenue and the Erie Railroad, which it will equip with iron working machinery at once. Plans for a testing and pattern shop building have also been drawn, which the company will erect shortly.

The International Auto League Tire & Rubber Company, 270 North Division street, Buffalo, has commenced erection of its new plant for the manufacture of rubber tires at Northland avenue and the New York Central Railroad belt line.

Samuel C. Rogers & Co., Buffalo, have been incorporated with a capital stock of \$50,000 by Oliver Cabana, Jr., M. J. Cabana and E. G. Mansfield to manufacture hardware supplies, etc.

### New England

BOSTON, MASS., December 12, 1911.

The dealers feel a great deal encouraged by the totals of their November business. With some of them it is the largest month in the year, as was stated last week. There is a strong feeling that the conditions have really begun to improve, though it is not expected that December will be relatively large as compared with October and November, this being an inventory month when the natural tendency is to conserve resources in order that the statement for the year shall make a good showing. Some of the machine builders are do-

ing a very fair business, both at home and abroad. This report comes to Boston from various parts of the country. However, the older standard types of machinery are not affected by whatever improvement may have reached business as a whole.

The industrial stocks of Connecticut are showing an improved market. The Colt Patent Firearms Mfg. Company, Hartford, which lost 2 points in October, rose 5 in November and now stands at the highest of the year, 155 bid. The Union Mfg. Company, New Britain, gained 5 points in November to 70. The American Hardware Corporation rallied 4½ points to 137½ bid, 146 asked. The New Britain Machine Company advanced 3 points to 60; Landers, Frary & Clark, New Britain, 2 points to 92; Eagle Lock Company, Terryville, 1 point to 97; Stanley Works, New Britain, 1 point to 56; International Silver Company, Meriden, ½ to 113. The public service and bank stocks show an average increase which is equally a good sign.

While Boston and Portsmouth, N. H., would be seriously affected by the proposed concentration of navy yards at Narragansett Bay, the New England territory as a whole would be benefited by the change. The selling agencies of this section would become more important under their exclusive territorial rights. The idea of the Secretary of the Navy, as embodied in a recommendation to Congress, is that the navy would be much better served by three naval stations of the highest rank, than by a long list of small yards. The subject has been agitated for a number of years, but it was presumed that Boston would be one of the survivors as a main station, instead of as an auxiliary yard, as now planned. Narragansett Bay provides an ideal site because of the fact that the largest possible fleet could be given anchorage, and the harbor is already strongly fortified. Considered from the standpoint of economical production of navy yard work the concentration in modern shops conducted on a high class efficiency basis, would yield a tremendous saving. Narragansett Bay is in the territory of the Boston and Providence dealers who already supply the torpedo station at Newport. Their market should be largely increased if this change is made, for the one station would be much larger than the combined Boston and Portsmouth yards.

Some signs indicate a revival of the textile machinery industry but not on a large scale at present. The shops are somewhat more active, especially on certain rush orders. The textile industry itself is more prosperous in practically all of its branches so that the expectation is that the textile machinery people will be affected to an important extent before many months.

Much interest has been shown in the schedule of increase in wages for workmen as posted at the Boston Navy Yard. This is not a final settlement of the wage question, the list being in the nature of information to men in order that any protest or suggestion may be received from them. Various ratings are abolished, among them being anchor makers, reamers, iron rollers, tool makers, tool sharpeners and ore workers. The changes include the following:

Boilermakers—Now \$3.60, \$3.44, \$3.20, \$3.04; proposed, \$3.76, \$3.52, \$3.28, \$3.04.  
 Iron calkers and chippers—Now \$3.12, \$2.88, \$2.64, \$2.40; proposed, \$3.36, \$3.12, \$2.88, \$2.64.  
 Coppersmiths—Now \$3.84, \$3.60, \$3.36, \$3.12; proposed, \$4, \$3.76, \$3.52, \$3.28.  
 Drillers—Now \$2.80, \$2.56, \$2.24, \$2; proposed, \$3.04, \$2.80, \$2.56, \$2.32.  
 Millmen—Now \$3.04, \$2.80, \$2.56, \$2.32; proposed, \$3.25, \$3.28, \$3.04, \$2.80.  
 Pipefitters—Now \$3.60, \$3.36, \$3.12, \$2.88; proposed, \$4, \$3.76, \$3.52, \$3.28.  
 Riveters—Now \$3.12, \$2.88, \$2.64, \$2.40; proposed, \$3.36, \$3.12, \$2.88, \$2.64.  
 Shipwrights—Now \$3.52, \$3.28, \$3.04, \$2.80; proposed, \$3.76, \$3.52, \$3.28, \$3.04.  
 Tooldressers—Now \$3.36, \$3.12, \$2.88, \$2.64; proposed, \$3.52, \$3.28, \$3.04.  
 Tool machinists—Now \$3.76, \$3.52, \$3.28, \$3.04; proposed, \$4.00, \$3.76, \$3.52, \$3.28.

The Kerite Insulated Wire & Cable Company, Seymour, Conn., has awarded the contract for an addition to its factory, 20 x 120 ft., one story and basement.

The Sprague Meter Company, Bridgeport, Conn., will erect a factory building, 60 x 168 ft., three or four stories, of steel construction.

The B. T. Green Shipbuilding Company, Chelsea, Mass., has taken a lease of the Nat's Point shipyard at Stonington, Conn., and will operate the plant for shipbuilding. The yard was recently used by the Atlantic Shipbuilding Company. It is said that the new lessees will build a marine railway on the property.

The Fish Indicator Company, New London, Conn., has been incorporated with a Connecticut charter and a cash capital of \$20,000, and has established a factory

in that city for the manufacture of marine indicators. The incorporators are Edwin A. Fish, New London, who is president; George E. Fellows and Lewis R. Church, Norwich, Conn. The company states that it has purchased all the equipment that it will need at present.

The United States Metal Screen Company, Norwalk, Conn., which has taken floor space in the factory of the Joseph Loth Company on Grand street, is having machinery built for the manufacture of metal screens and expects to install it in the near future. The company will start business on a moderate scale with the expectation of increasing its output in a large way as time goes on. The product is the invention of F. S. Banks of Wilton, Conn.

Harry G. Stoddard, the retiring president of the Trenton Iron Company, Trenton, N. J., who has acquired an interest in the business of the Wyman & Gordon Company, Worcester, Mass., manufacturer of drop forgings, will be made a director and vice-president of the corporation, and will occupy the office of sales manager. Lyman F. Gordon continues as president and treasurer and George F. Fuller remains as secretary and will hereafter be the general manager, instead of superintendent as at present.

The Waterbury Metal Products Company, 23 Jefferson street, Waterbury, Conn., has established a factory for the manufacture of small metal goods such as are turned, cut and drawn and stamped. John B. Wallace, Jr., is the president and F. A. Coppelt, Jr., secretary and treasurer.

## Philadelphia

PHILADELPHIA, PA., December 12, 1911.

As the year end approaches the volume of business transacted gradually eases off, prospective buyers in many cases deferring the actual placing of orders until after the turn of the year. The contrary is noted in reference to inquiries. A very fair amount of what is considered bona fide inquiry for various classes of equipment is being received, not so much for the general line of machine tools as for special equipment, including cranes, particularly of the larger electric traveling type. In addition there is about the usual amount of inquiry covering probable early 1912 needs, for which data are being gathered to be presented to officers and directors, in connection with the usual annual reports.

Buying during the week has not been very active, transactions having been confined to small lot and single tool purchases, mostly in the smaller lines of equipment. While the movement in special tools has been light, indications for a better volume of business are observed. There is still an absence of anything of importance from the railroads, although the trade is encouraged by the continued activity of railroad buying in other directions, which will ultimately have some bearing on the machinery market.

Second hand machinery merchants report a fair run of miscellaneous buying. Considerable business in power equipment is before the trade, but closes slowly. Little new demand is reported in connection with the export trade. The situation in the foundry trade is still irregular, some of the jobbing foundries have taken a fair amount of work, but the demand for machinery castings continues light. Steel casting plants report unchanged conditions.

A building used for the storage of patterns at the foundry of the Niles-Bement-Pond Company at Nicetown was destroyed by fire December 8. A number of the patterns were saved. No damage was done to any other department of the plant, operation of which will not be interrupted.

The Hershberger Removable Calk Horseshoe Company, Wilkes-Barre, Pa., has been incorporated with a capital stock of \$25,000 to manufacture horseshoes, metal implements, drop forgings and electrical appliances. It is the intention of the company to equip a plant in the very near future. The officers are: President, F. A. Wiltraut; vice-president, J. H. Hershberger; secretary, J. W. Thomas; treasurer, A. S. Hershberger.

The Reading Steel Casting Company, Reading, Pa., which has let a contract for the erection of a new pattern shop and office building, advises that it is not in the market for any new equipment for the pattern shop.

The Baldwin Locomotive Works, which has in contemplation the erection of a considerable addition to its erecting shop at Eddystone, Pa., has been sending out inquiries for its crane equipment.

The New Process Steel Company, Lancaster, Pa., has in contemplation the erection of a considerable ad-

dition to its plant. Developments have not advanced sufficiently to state what the improvements will cover.

The Sweets Steel Company, Williamsport, Pa., has recently increased its capital stock to \$340,000 and has made extensive improvements to its plant, including a new power plant, two new mills and two continuous heating furnaces, together with the necessary equipment of shears, conveyors, etc. This company advises that it is now prepared to turn out a complete line of bars and special shapes.

The Fidelity Machine Mfg. Company, of this city, has been incorporated with a capital stock of \$25,000 and will engage in the manufacture of textile as well as general special machinery. A plant has been acquired in Frankford and it is expected that it will be in operation at an early date. John J. Higginbottom, 2021 East Huntington street, is interested in the new concern.

The Lancaster Foundry Company, Lancaster, Pa., has completed arrangements for the installation of a nickel-plating plant and has under consideration the addition of several special lines to its present range of products.

The C. H. A. Dissenger & Bro. Company, Lancaster, Pa., notes an improved demand for its line of stationary as well as portable gasoline engines. This company has practically completed the construction and equipment of its new plant. The foundry department has not yet been operated, but is expected to be started at an early date. The purchase of general equipment for the foundry is now being considered.

The Tabor Mfg. Company reports a decided improvement in the demand for molding machinery and has booked sufficient business to enable it to resume plant operations at full time. The demand for its line of Taylor-Newbold inserted tooth cold saws continues very good. The erection of its proposed new plant in the northwestern section of the city will be started, it is stated, early in the spring.

Rowland, Firth & Son, Phillipsburg, N. J., have about completed the erection of their new steel foundry department, which has been equipped with a 10-ton open hearth furnace and which they expect to have in operation by January 1.

The Lancaster Machine & Structural Works, Lancaster, Pa., is operating its plant at about 50 per cent. of its capacity, although the foundry department is more fully engaged. This company has a large amount of work under way in connection with fire escapes in Washington, D. C., involving work on 25 apartment houses. The company has a well equipped structural shop and its foundry has a capacity of 18 tons a day. It is now considering the installation of a sand blast cleaning system in its foundry department.

#### Catalogues Wanted.

The Hudson Supply Company, Wilmington, Del., desires catalogues from manufacturers of mill supplies, comprising packing, belting, files, emery wheels, bolts, nuts, washers, etc.

#### Chicago

CHICAGO, ILL., December 12, 1911.

The local demand for machine tools continues to improve. The purchase of a complete machine shop equipment for the new manual training school at Guthrie, Okla., from Jos. T. Ryerson & Son is noted. In addition to this sale, which totaled in the neighborhood of \$15,000, the same company has disposed of several smaller lots of tools. Some of the railroads are still hampered by lack of money to purchase needed equipment for their shops, but the tendency seems to be toward a general financing of their needs, and during the past week one road which has had a large list under consideration for several weeks past is understood to have made a considerable advance toward closing. The Illinois Central requirements remain unfilled. In Chicago and the neighboring suburbs the week witnessed the buying of an encouraging number of large tools for heavy duty.

Chas. F. Borvey has taken out a permit to erect a two-story brick factory at 401 West Superior street to cost \$25,000.

The F. A. L. Auto Company, Chicago, has been incorporated, with a capital stock of \$2,500, to manufacture and deal in motor vehicles, etc. The incorporators are Frederick C. Harboer, Clinton S. Lamb and E. E. Lundberg.

The capital stock of the Palmetto Metal Company, East Moline, Ill., has been increased from \$100,000 to \$500,000.

Simkin Mfg. Company, Chicago, has been incorporated with a capital stock of \$25,000 to manufacture and deal in automobiles, automobile accessories, etc. The incorporators are Albert J. Elliott, H. Prather Elliott and John T. Evans.

C. E. Whitehead Time Recorder & Supply Company, Chicago, has been incorporated with a capital stock of \$2,500 to manufacture time recording machines. The incorporators are Charles W. Whitehead, James B. Phelan and Helen L. Smith.

The Keokuk Electric Railway Company, Chicago, has been incorporated with a capital stock of \$650,000 to operate railways and produce and distribute gas, electricity, etc. Incorporators are George Higginson, Jr., Joseph L. Valentine and Robert H. Van Deusen.

Duplex Motor Plow Company, Chicago, has been incorporated with a capital stock of \$5,000 to manufacture agricultural implements, machinery, etc. The incorporators are Howard W. Lewis, Herschel V. Shepard and Joshua H. Lewis.

American Sheet Metal & Machinery Company, Chicago, has been incorporated with a capital stock of \$10,000 to do a general iron and steel foundry business. Incorporators are Albert W. Schulz, Hans C. Rosnes and Harry C. Kinne.

The Atchison, Topeka & Santa Fé Railroad has acquired a site at Peoria, Ill., for a terminal, at which point machine shops will be built.

E. J. LeHew, Galesburg, Ill., is seeking a franchise to supply light and power to the village of Williamsfield, Ill. He contemplates installing a \$6,000 steam and electrical plant.

The Kaiserman Shade Roller Company, Kankakee, Ill., has been awarded a factory site by the Commercial Association of that city and a new plant will be erected.

The Hackney Mfg. Company, St. Paul, maker of farm implements, has acquired property at University avenue and Houston street, upon which a factory building will be erected at a cost of \$100,000.

The Hamm Brewing Company, St. Paul, Minn., is to erect a machine and blacksmith shop on Cable avenue, in that city, at a cost of \$12,000.

The Hay Tool Mfg. Company, Council Bluffs, Iowa, whose plant was recently destroyed by fire, has had plans prepared for a new building, 40 x 100 ft., which will be equipped with electric motors.

The city of Decatur, Ill., will receive bids until December 28 for furnishing engine and 100-kw. generator, switchboard and other equipment. Albert Leach is city clerk.

#### Cleveland

CLEVELAND, OHIO, December 12, 1911.

Business with the local machine tool dealers the past week has been confined mostly to single tools, for which there is a fair demand. Larger sales were limited to 2 or 3 tools. No new inquiries of any size have appeared. The railroads are doing very little buying, although the New York Central Lines have an inquiry out from Cincinnati for 3 or 4 bolt cutters and drill presses. The demand for second hand tools is not active. Orders for turret lathes have improved this month, the demand coming from scattered sources outside of the automobile trade. The automobile builders, some of whom bought considerable machinery during the fall, appear now to be well supplied with machinery, and very little business is now coming from this source.

The demand for power plant equipment is quiet as far as the placing of orders. A good volume of live inquiries is pending but very little of this business is expected to be placed until after the first of the year.

The Ohio Machine & Boiler Company, Cleveland, builder of boilers, tanks, clam shell buckets and other work, has commenced the erection of a new plant on a new site at 1503 University avenue. The building will be 120 x 245 ft. One section will be used as a machine shop and the other as a boiler shop. The machine shop portion will be two stories. The new plant will enable the company to largely increase its output. No new machinery will be required.

The Cleveland Foundry Company, maker of oil stoves, is completing a large addition to its plant. The company reports a very satisfactory volume of business. The plant is being run full with some overtime work to keep up with orders.

The Defiance Pressed Steel Company, Defiance, Ohio, has completed additions to its plant, which will practically double its capacity. The plant now has a capacity of 1200 steel boxes per day. Further improvements are under consideration.

The National Electric Lamp Company, Cleveland, is planning the erection of a new plant in Youngstown, Ohio.

Plans for a new shoe manufacturing plant to be erected by the G. Edwin Smith Shoe Company, Columbus, Ohio, are being prepared by Richards, McCarty & Bulford, architects, of that city. The company expects to build an eight-story reinforced concrete fire-proof structure on a site recently purchased on Water street. The company has increased its capital stock from \$200,000 to \$350,000.

The Water Commissioners, Erie, Pa., will build a shop and storage building, 60 x 100 ft. and two stories. A crane will be installed for handling pipe and other material. Armin Schottee is the architect.

The Erie Forge Company, Erie, Pa., will enlarge its plant. Plans provide for a machine shop of steel construction, a pattern shop and other buildings.

James M. Ashley, Toledo, Ohio, has been elected president of a company that proposes to build a dam across the Ohio River at Lotart Falls, Meigs County, and build a large power plant to furnish electrical power in the southern part of the State.

The Columbus, Urbana & Western Railway has applied to the Public Service Commission for authority to issue \$50,000 additional in stock and \$5,500,000 in bonds for extensions of its lines from Columbus to Findlay, Ohio, and from Kenton to Wapakoneta.

The Scherer Rolling Lift Bridge Company, Chicago, is the low bidder on a bascule span on the Cherry street bridge, Toledo, Ohio.

The Pittsburgh Valve & Fittings Company will erect a one-story addition, 60 x 560 ft., to its foundry at Barberton, Ohio.

The Attwood Wrench, Tool & Stamping Company, Conneaut, Ohio, has increased its capital stock from \$25,000 to \$150,000.

The Myers Nonspreading Rail Company, Toledo, Ohio, has been incorporated with a capital stock of \$10,000 by Wellington T. Huntsman and others.

The Cleveland Wire Fence Company, Cleveland, Ohio, has been incorporated with a capital stock of \$75,000 by Elmer G. Derr and others.

The American Metal Specialties Company is the name of a concern just incorporated in Columbus, Ohio, with a capital stock of \$10,000 by Arthur M. Crumrine and others.

The General Steel Products & Supply Company, Toledo, Ohio, has been incorporated with a capital stock of \$100,000 by E. J. Marshall and others.

A large central power plant for operating a number of coal mines will be built at Shelby, Ky., by the Consolidation Coal Company, Fairmont, W. Va. It is stated that it is the intention to eventually have a plant of 5000-kw capacity. Among the purchases already reported for the plant are six 430-hp Rust vertical boilers, stokers from the Detroit Stoker Company, Detroit, Mich., and Foster superheaters from the Power Specialty Company. The buying of the equipment is in the hands of A. T. Watson, purchasing agent.

### Cincinnati

CINCINNATI, OHIO, December 12, 1911.

As the holiday season approaches there is a reported slackening in the buying of machine tools, but inquiries on file indicate that an excellent business may be expected soon after the first of next year. The export trade continues to hold its own, and many manufacturers in this section are making plans for going after this particular business in a more vigorous manner.

There is a lull in the second-hand machinery demand, which is usual at this time of the year. The foundries are operating at about the same rate of capacity as has been reported for the past four weeks.

The Superintendents and Foremen's Club of Oakley, Ohio, held a meeting on the evening of December 5 in the newly finished auditorium hall of the Cincinnati Milling Machine Company. In addition to the regular routine business transacted, an amendment to the by-laws was passed admitting members who were not connected with the Oakley plants. This amendment enabled C. W. Moon, secretary of the club, who has lately gone with the R. K. LeBlond Machine Tool Company, in East End, to retain his membership in the organization.

The Springfield Tire & Rubber Company, Springfield, Ohio, has increased its capital stock from \$50,000 to \$150,000, and it is rumored will make some additions to its factory some time next year.

The Prince Motor Car Company has been incorpo-

rated at Warrensville, Ohio, with \$200,000 capital stock, for the purpose of manufacturing motor cars. Among the incorporators are W. F. Kehnes, Thomas J. Atkinson and J. A. Hecker, all of Warrensville.

The Ashland Steel Company, Ashland, Ky., has had plans made up for some improvements to its plant at that point.

It is rumored that the Ironton Electric Company, Ironton, Ohio, intends purchasing the Ohio Valley Electric Company, and will construct a large central generating plant some time next year.

The Bluffton Mfg. Company, Bluffton, Ohio, has been incorporated with \$60,000 capital stock to manufacture tools and implements. Among the incorporators are A. D. Lugibihl and H. D. Zehrbach, both of Bluffton.

C. A. Kurz, formerly local manager at Dayton, Ohio, for the C. C. Kaven Company, Chicago, has opened a chemical and metallurgical laboratory in the Patterson Building, Dayton, under the name of the C. A. Kurz Chemical Laboratories. A little later some special apparatus will be required to fit up a department for making physical tests of different metals.

One of the largest cigar factories in the country is now under construction at Evansville, Ind., for H. Fenrich. The new structure will be 241x464 ft. of brick, and mill construction. The main part of the building will be three stories. In addition to heating equipment, some electrical machinery will be required.

The Dresden Mill Company, Dresden, Ohio, was recently incorporated with \$15,000 capital stock, and will probably erect a small flour mill. T. P. Perkins is named as one of the principal incorporators.

The Standard Pulley Company, Cincinnati, has acquired additional property adjoining its plant, and it is reported that some extensions will soon be made to its factory in Cumminsburg.

The Jolliffe Coal & Coke Company, Fairmont, W. Va., has been incorporated with \$150,000 capital stock, with the announced intention of mining coal and manufacturing coke. M. A. Jolliffe and Jacob S. Hayden are named among the incorporators.

### Detroit

DETROIT, MICH., December 12, 1911.

The market for the first week in December bears out the indications that the present inactivity in the machine tool trade will continue until after the first of the year. The usual run of single tool orders are being booked but no propositions of importance are in sight. Some inquiries for future requirements from local manufacturers are noted and merchants are hopeful of renewed activity early in January. A better volume of business is being noted among the manufacturing machinists in the way of special equipment for the automobile accessory companies. A seasonable dullness is noticeable in the demand for boilers. The second hand machinery trade, reflecting the general trade, is not active and dealers' stocks are piling up.

The automobile and accessory plants are busy, and are steadily adding men to their payrolls, with a resultant increase of output which presages future machinery requirements. Local railway equipment companies are receiving their share of orders for building new cars and the shipbuilding companies have bookings which will keep their plants busy throughout the coming year. Other lines of industry are under full headway and skilled mechanics are in demand. New construction is of negligible quantity.

The Briggs-Detroiter Company has been incorporated with a capital stock of \$200,000 to manufacture automobiles. The principal stockholders are John A. Boyle and Claude S. Briggs. The new company has secured a site of about two acres in the Hamtramck factory district on which a large building has already been erected and consideration is now being given to the question of equipment, in order that manufacturing operations may be begun in the near future.

The Chrevolot Motor Company has filed amended articles of incorporation increasing its capital stock from \$100,000 to \$2,500,000. Officials of the company state that, contrary to current rumors, the increase in capital will not be utilized to acquire other companies but to enable the original company to engage in business on a more extensive scale.

The Wolverine Motor Supplies Company, manufacturer of automobile accessories, has increased its capital stock from \$10,000 to \$25,000.

The Weir-Horton Mfg. Company has been incorporated with a capital stock of \$25,000 for the purpose of manufacturing and dealing in automobiles, motor cycles and gasoline engines.

The Prince Nut Lock Company has been incorporated with a capital stock of \$150,000 by John D. Prince and others for the manufacture of nut locks.

The Lockwood-Ash Motor Company, Jackson, Mich., has purchased the business of the Never-Miss Mfg. Company, of Lansing, manufacturer of gas engine ignition specialties, and will move the plant to Jackson where it will occupy a new addition, 60 x 80 ft., to the Lockwood-Ash factory.

The plant of the National Chicory Company at Bay City, Mich., recently destroyed by fire, will be rebuilt on a larger scale, and the new factory will be of fire-proof construction.

The Apex Horseshoe Company, Albion, Mich., which has heretofore had its products manufactured by contract, is contemplating the erection of a factory building at Albion.

Anderson Bros., owners of the electric lighting plant, Hartford, Mich., are seeking a renewal of their franchise. The new franchise will contemplate improvements, amounting to a complete remodeling of the power plant.

The Nichols & Shephard Company, Battle Creek, Mich., manufacturers of threshing machines, is about to build a new iron foundry.

The Commonwealth Power Company which owns a chain of power companies in central Michigan cities, with headquarters at Jackson, has been authorized by the State Railway Commission to issue bonds to the amount of \$1,860,000. One million dollars of the issue is for refunding purposes and the remainder is for the stated purpose of making improvements in the several plants of the company, as follows: Saginaw Power Company, \$90,000; Bay City Power Company, \$27,000; Pontiac Power Company, \$36,000; Flint Power Company, \$54,000; Consumers Power Company, Owosso, \$36,000; Commonwealth Power Company, Jackson, \$72,000; Grand Rapids-Muskegon Power Company, \$450,000. It is announced that the company expects to spend at each plant amounts in excess of the bond issues proposed therefor.

The Grand Trunk Railroad will double the capacity of its car shops at Port Huron, Mich. A large part of the machinery to be installed will be brought from the shops of the company in other cities.

The plant of the defunct Ypsilanti Underwear Company at Ypsilanti, Mich., has been sold to the Oak Knitting Company of Syracuse, N. Y. The plant comprises four large buildings and a considerable amount of new equipment will probably be required as a large part of the machinery has been heretofore disposed of by the receiver for the Underwear Company.

The P. J. Smith Machine Company, Monroe, Mich., manufacturer of glue presses and special veneering machinery, will transfer its business to Bay City, Mich., and merge its plant with that of the MacKinnon Boiler & Machinery Company. The company will erect several new buildings. The first, a foundry, about 50 x 200 ft. will be begun in the early spring.

The I. Stephenson Lumber Company, Escanaba, Mich., lumber manufacturer, has increased its capital stock from \$600,000 to \$800,000.

The Ottawa Leather Company, tanners, Grand Haven, Mich., has increased its capital stock from \$100,000 to \$200,000 with a view of extending the scope of its business.

George M. Winegar and H. Van de Greyn of Lowell, Mich., have organized a company for the manufacture of manual training benches and other furniture specialties. A factory has been secured and will be equipped at once.

The Board of Education, Hancock, Mich., is in the market for a boiler to be installed in the high school of that city.

The Washed Gravel & Sand Company, Dayton, Ohio, has purchased a large tract of gravel land near Jackson, Mich., and will erect a plant to cost, it is stated, about \$75,000 for the preparation of building and road-making materials.

A new company to be known as the Saginaw Gas & Oil Company is being organized by L. K. Davis and H. L. Thompson of Ulrichville, Ohio, to develop a large tract of oil land near Saginaw, Mich.

Robert J. Hill Houghton, Mich., is interested in the organization of a new company to establish a beet sugar factory in that city.

The Saginaw Wood Products Company, Saginaw, Mich., is in the market for motors from 3 to 30 hp., alternating current 250-volt 60-cycle three-phase, either new or second hand.

The Standard Foundry & Mfg. Company, Alma,

Mich., recently mentioned as having been incorporated, has had plans prepared for a foundry building, 44 x 60 ft., one story, and a machine shop, 40 x 200 ft., one story. The company will be in the market soon for an electric crane and a steam or gasoline engine.

### Indianapolis

INDIANAPOLIS, IND., December 12, 1911.

The J. Q. Clarke Tank Company, Parksville, Ind., recently incorporated to manufacture tanks, fountains, silos, etc., has had plans prepared for a factory building, 60 x 100 ft., of brick construction, and will equip it with modern machinery for the manufacture of its product.

The T. W. Warner Company, Muncie, Ind., has had plans prepared for a factory building, 60 x 100 ft., two stories, and a power house, 25 x 30 ft., one story, to cost approximately \$20,000.

The Empire Gear Company, Indianapolis, recently organized with \$20,000 capital stock, has elected the following officers: President, Frank S. Clark; vice-president, Charles H. Hurd; secretary, Howard M. Talbott; treasurer, Albert H. Off; general superintendent, Wesley Hafler. The advisability of increasing the capital stock to \$250,000 is being discussed. Motors, transmissions and other automobile parts will be manufactured.

The Orinoce Furniture Company, Columbus, Ind., has increased its capital stock from \$25,000 to \$50,000.

The Indiana Brass Company, Frankfort, Ind., has been incorporated with \$10,000 capital stock, to manufacture brass and iron goods. The directors are J. A. Johnson, C. E. Williams and A. J. Johnson.

The S. S. Cox Show Case Company, North Manchester, Ind., has issued \$5000 of preferred stock, increasing its total issue from \$65,000 to \$70,000.

The Industrial Board of Newcastle, Ind., is negotiating with the McDonald Brothers Pitless Scale Company to move its main factory at Pleasant Hill, Mo., to this city and consolidate it with the branch here.

The Muncie Ornamental Iron Works, Muncie, Ind., has been incorporated with \$10,000 capital stock, to manufacture structural iron, etc. The directors are C. W. Hanika, John Fitzgibbons and C. B. Fitzgibbons.

### The South

LOUISVILLE, KY., December 12, 1911.

More favorable conditions continue to be reported by the leading machinery manufacturers. Not only are inquiries coming in as rapidly as ever, but orders are being closed with apparent disregard of the usual tendency to wait until the first of the new year. Power equipment, including motor installations, are probably the leading factors at present, while the number of wood-working developments in this section seems to offer assurances of heavy business for the manufacturers of equipment of this character.

The Board of Commissioners for the new city hospital of Louisville will receive bids until January 4 for the construction and equipment of the plant. In addition to power machinery, the hospital requirements include refrigerating apparatus, a steam heating plant, electrical equipment and laundry machinery.

The Jefferson Woodworking Company, Thirtieth street and Grand avenue, Louisville, is erecting an addition to its plant. A brick and frame building is being put up, and a considerable amount of wood-working machinery will be bought, the estimated cost of which is \$5,000. A contract for a 150-hp. boiler has been let to C. J. Walton & Son of Louisville, and an order will be placed shortly for a 90-hp. engine. The company manufactures table slides.

The James Clark, Jr., Electric Company, Louisville, reports heavy business at present. It has been given the contract for a generator and engine to be installed in the plant of the Jellico Light, Heat & Power Company, Jellico, Tenn., the equipment consisting of a 200 k.v.a. alternator, 2300-volt, 3-phase, direct connected to a Skinner engine. The company has also received the order for 57 individual motors to be installed in the planing mill and wood-working plant of the Alfred Struck Company, Louisville, which is converting its plant from steam to electric current. An aggregate of 500 hp. is involved.

The American Automobile Mfg. Company, New Albany, Ind., is now installing machinery in connection with the proposed manufacture of a line of motor trucks ranging in load capacity from 500 pounds to

three tons. The first named will be a three-wheeled package car. George A. Buckley is now superintendent of the plant, having succeeded C. D. Norris.

D. C. Mullins & Son, Partridge, Ky., have announced plans for the construction of an electric light and power plant at Whitesburg, Ky. This town is situated in Letcher county, in the extreme eastern part of the state, and is some distance from a railroad. The firm has stated that ample capital for the undertaking has been provided.

Anderson & Frankel, Lexington, Ky., have been retained for the purpose of designing the electric light plant of Falmouth, Ky., for which the proceeds of a \$7,000 bond issue will be spent.

Work has been begun on the main turbine power station of the Lexington Utilities Company, a subsidiary of the Kentucky Traction & Terminal Company, Lexington. The plant is of the design of Sargent & Lundy, Chicago. Most of the machinery has been bought.

The Harlan Coal Company, Harlan, Ky., is building a power plant and purchasing equipment in connection with the development of its property on Clover Fork, near Harlan. A daily capacity of twenty cars of coal is to be provided for.

The Huntington Handle Company, Huntington, W. Va., will build a hickory handle factory at West Liberty, Ky., the site for the plant having been secured. W. O. Smith, superintendent, is in charge of the erection of the factory.

The Waller Mfg. Company, Lexington, Ky., is increasing its capital stock and plans to enlarge its factory for the manufacture of furniture, tobacco hogsheads, etc.

The plant of the Ritchey Mfg. Company, McMinnville, Tenn., which was recently burned, is to be rebuilt. The company wants a boiler and engine as well as wood-working machinery especially adapted to the manufacture of telephone pins.

The Allen Engineering Company, Memphis, Tenn., has been awarded a contract for the construction of the water works and electric light plant of Trenton, Tenn. The cost of the plants will be a little over \$17,000.

Craig & Fisher, Covington, Tenn., have the contract for the construction of the water system of Union City, Tenn., the cost being \$18,000.

The power plant of the Jackson Railway & Light Company, Jackson, Tenn., is to be enlarged in the near future. A steam turbine is to be installed. The estimated cost of the new building is put at \$30,000.

The Improved Brick Stone Company, Memphis, Tenn., has been organized, and a plant is to be erected for manufacturing a new process brick. The probable cost of the plant is \$10,000, and it will have a capacity of 10,000 bricks a day. W. L. Sanderson is manager of the company.

The Emory & Henry College, Johnson City, Tenn., is planning the installation of a lighting plant, as well as heating facilities. S. E. Vaught is in charge of the work.

J. B. Short, Humboldt, Tenn., and other have raised subscriptions amounting to \$75,000 for the erection of a cotton oil mill to take the place of that recently burned at Trenton, Tenn.

H. B. Lindsay, an attorney of Knoxville, Tenn., is responsible for the statement that the Aluminum Company of America has purchased power rights on the Little Tennessee river in Tennessee and North Carolina and will shortly proceed with the erection of several immense hydro-electric plants. Mills for producing aluminum in Eastern Tennessee are also in contemplation, Mr. Lindsay has stated.

The Chattanooga Manufacturers' Association, Chattanooga, Tenn., is interested in the extension of manual training courses in the public schools of that city and recently arranged a lecture on the subject of "The Duty of the Public to Industrial Education," which was delivered by Prof. Carroll G. Pearse. Manual training courses were recently put in operation in the Chattanooga high schools.

The Southern Ice Company of Delaware has been incorporated with a capital stock of \$5,000,000 for the purpose, it is reported, of building a chain of ice factories in Tennessee and other states. It has filed its charter also at Nashville, Tenn. J. H. Howe and others of that city are interested.

It is reported from Nashville, Tenn., that the Nashville Railway & Light Company has planned the expenditure of several hundred thousand dollars during 1912, a power-house being one of the projects under consideration.

The Great Falls Power Company, Nashville, Tenn.,

expects to begin work in the next few months on the development of a power project at Caney Fork Falls.

J. Frank White and others, Knoxville, Tenn., have purchased 800 acres of coal land near Jellico, Tenn., and are now forming a company which will develop the property.

The Board of Trustees for the Central Hospital for the Insane of Tennessee, with offices at Nashville, will let contracts shortly for an 8-ton refrigerating plant, a 75-kw. generating unit and fire equipment, including a service pump, mains, hydrants, etc. C. S. Brown, Nashville, is consulting engineer.

The Knoxville Wonder Gas Plant Company, Knoxville, Tenn., plans the erection of a plant to manufacture machines for treating kerosene. C. K. Vance, W. S. Needham and G. J. Dominick are interested.

Work is soon to begin on the new millwork factory of the Southern Mfg. Company, Gadsden, Ala. A sawmill is to be erected later on.

The Stapp-Bass Lumber Company, Chelsea, Ala., is erecting a planing mill. Besides wood-working equipment, boilers will be wanted.

The Sisal Hemp & Development Company, Jacksonville, Fla., is in the market for a 200-hp. electric power plant for installation in a rope mill.

Charleston, S. C., is considering putting into effect plans for a \$2,000,000 water plant, including the erection of a pumping station, reservoir, etc., and the laying of 9½ miles of 24-in. cast-iron pipe.

Work has been begun on the new plant of the Oklahoma Rolling Mill Company, Guthrie, Okla. The plant is to have a daily capacity of 40 tons. C. H. Martindale, vice-president of the company, is in charge of the erection of the plant.

The Amalgamated Phosphate Company, Chicora, Fla., plans the erection of a plant with a daily output of 1500 tons of phosphate. In connection with the development, an electric light plant, water works and sawmill are to be erected. Anton Schneider, Bartow, Fla., is manager of the company.

The Mayor and Council of Unadilla, Ga., will receive bids until December 20 for the construction of a sanitary sewerage system. The bids call for 1½ miles of 6 and 8-in. water mains and appurtenances, an 80-hp. boiler, pumping engine and air lift installation. The J. B. McCrary Company, Atlanta, Ga., is engineer in charge.

The Hickory Chair Mfg. Company, Hickory, N. C., has been incorporated with \$150,000 capital stock to take over the business of the Surry Chair Company, Elkins, N. C. The company is having buildings erected at Hickory and will remove its equipment as soon as they are completed.

## St. Louis

ST. LOUIS, Mo., December 11, 1911.

The approach of the close of the year has had some slight effect on the machine tool market, although there is still a fairly good run of buying of the character which has been noted in recent weeks. The large buyers remain persistently out of the market except for occasional single machine needs. The smaller buyers are doing very well, all things considered, but comparatively little business out of what has come to be considered the ordinary, of the present day, is expected until after the first of the year and the balancing of the books for 1911.

The Pope Tin Plate Company, Steubenville, Ohio, is considering the matter of establishing a large branch manufacturing plant in St. Louis to take advantage of the freight rates in distribution.

The Inland Type Foundry, one of the largest manufacturers of type and other printers' supplies in the country, will remove January 1 to Jersey City, N. J. The company employs about 300 hands, most of whom will remove with the factory.

The Southern Mining Company, with offices in Williamsburg, Ky., has acquired under lease all the coal land and mine holdings of the Asher Coal Company of Wasito, Ky., and will increase the equipment. About \$500,000 will be spent for equipment, and among the purchases of machinery will be a central electrical plant with a 500-kw. generator.

The D. F. McCarthy Coal Company, Cairo, Ill., has been incorporated with \$25,000 capital stock by R. L. and D. F. McCarthy and F. J. Walter and will equip a mine in the vicinity with machinery.

The Spring Valley Gas & Electric Company, with \$300,000 capital stock, has been incorporated at Spring Valley, Ill., by C. and C. H. Brown, Harry R. Brown and

Mechanical and Civil Engineers,  
PITTSBURGH, PA.

Roy W. Brown for the development of public service plants at that point.

The Norman Land & Mfg. Company, Huntersville, Mo., has been incorporated with a capital stock of \$20,000 by W. W. Norman and J. R. Kinder. The company will equip a manufacturing plant at once.

The Lilbourn Screen & Power Company, Lilbourn, Mo., has been incorporated with \$50,000 capital stock by L. L. Thompson, Oscar Crosne and S. L. Trisley, and will equip a plant for the manufacture of patent screens.

The Long Silent Motor Company, Kansas City, Mo., has been incorporated with \$12,000 capital stock by Elmer C. Long, Frank R. Tate and Theodore Moreno for the manufacture of a new type of gasoline motor for automobiles.

The Joplin Novelty Mfg. Company, Joplin, Mo., has been incorporated by John Odell, Charles L. Moon and Charles Odell with \$20,000 capital stock, and will equip a manufacturing plant soon.

The Swanson-St. Louis Plow Company, St. Joseph, Mo., has been incorporated with \$175,000 capital stock by G. H. Vineyard, H. S. Swanson, William Kelley and others for the manufacture of plows and other agricultural equipment.

The Union Special Machine Company of Illinois, with \$500,000 capital stock, has been authorized to use part of its capital in a plant at St. Louis.

The Quincy Motor Company, Quincy, Ill., with \$50,000 capital stock, has been incorporated by Carl Becker, John Weisenborn, D. F. Hunaker and Thomas Quinlan for the manufacture of motors.

The Akin Steel Tire & Mfg. Company, Sumner, Mo., has been organized with \$300,000 capital stock by J. H. Akin, J. D. Stoner and C. M. Hooper, and will equip a plant for the manufacture of a new type of tire.

The New Dividend Mining Company, Joplin, Mo., has been incorporated with \$48,000 capital stock for the purpose of equipping mining property owned by the company. The incorporators are E. C. Dunmeyer, E. H. Resuer, S. A. Smith and others.

The Everlasting Fence Post Company, Kansas City, has been incorporated with \$100,000 capital stock by J. T. Smith, Edwin L. Miller and F. P. Van Hook for the manufacture of a metal post. A manufacturing plant will be built.

The prison factories at Huntsville, Texas, which were burned recently, will be rebuilt and equipped with machinery by the state at a cost of \$250,000, which will be raised on deficiency warrants issued without calling the legislature together.

Hert Eickhorn and George Cederwall, St. Louis, have purchased ground on which they will build a plant for the manufacture of stairs, staircases, window sashes, etc. The mechanical equipment will be placed shortly. The building will cost \$15,000.

John T. Milliken & Co., manufacturing chemists, will build a \$100,000 manufacturing plant and laboratory in St. Louis. The mechanical equipment required will be placed shortly.

The Kansas Flour Milling Company, Topeka, Kan., has been incorporated with \$9,000,000 capital stock, and will merge plants at Wellington, Great Bend, Arkansas City, Enterprise and Kansas City, Kan.

Mountain Grove, Mo., voted last Monday to issue bonds for the construction of a water works system in that city. The Mayor and the City Council will let the contract shortly.

The Boyd-Prigmore Milling Company, Sarcoxie, Mo., has been incorporated with \$90,000 capital stock by Richard Prigmore, J. J. and C. A. Boyd and will equip a mill at once.

Barnhart Bros. & Spindler, a New Jersey type foundry concern, has been authorized to use \$250,000 of its \$3,000,000 capital stock in a branch plant in St. Louis and for other purposes in Missouri.

The Hall & Brown Woodworking Machine Company has absorbed the Yerkes & Finan Woodworking Machine Company, both of St. Louis, and has increased its authorized capital stock to \$250,000 to perfect the deal. Heavy machinery will be manufactured at the Hall & Brown plant and lighter machinery at the Yerkes & Finan plant. The forces of both plants will be readjusted and enlarged to handle the business. The Hall & Brown Company was organized in 1877 and incorporated in 1888. It is one of the largest factories of the kind in the country. The president is Charles S. Brown, John F. Judd is vice-president and sales manager, and William Woltering, secretary and treasurer.

Henry Leschen, St. Louis, Mo., has had plans prepared for a 10-story loft building to be erected at the corner of Locust street and Jefferson avenue at a cost of \$1,000,000. The building will be 155 x 400 ft. deep.

The building is to be used for manufacturing purposes and power will be supplied.

The City of Springfield, Mo., will receive bids until January 15, through G. E. Arnold, engineer, for the construction of a sewage disposal plant.

The Avard Mfg. Company, Avard, Okla., has been incorporated with \$5000 capital stock. The company has in course of erection a new plant and is in the market for drops, dies, drill, gasoline engine and other special machinery.

## The Pacific Coast

SAN FRANCISCO, CAL., December 5, 1911.

The machine tool market shows some improvement, values involved in individual sales being somewhat larger than in October, and including one complete shop equipment of some importance. Some fairly good single tool orders have come from local shops and the volume of small business through the country continues satisfactory. There is nothing in the situation, however, to cause anticipation of any general revival, at least for several months to come. A number of small railroad inquiries are noted, but the larger roads are buying nothing at present, and other prospective buyers are in no hurry to place their orders.

A feature of the local trade for some time past has been the comparatively large movement of second-hand tools. Small inquiries for this class of equipment are coming up constantly, and several large sales have been closed within the last few months, though more used tools are still offered for sale than there is any market for. Some of the largest tools have been taken over by the Union Iron Works, which is one of the few local concerns in a position to take advantage of the bargains available. The latest purchase by this firm is the complete equipment of the Abner Doble Company's large shop, which has been operated in a limited way for some years past.

Among the local sales recently reported are a milling machine for the Federal Telegraph Company and a Schuchardt & Schutte gear-hobbing machine for the Pacific Gear & Tool Works.

The largest sale of the past month, and the only one closed in the oil fields for some time, is a complete shop equipment for the Esperanza Consolidated Oil Company, Taft, Cal., the sale being made by the San Francisco office of Manning, Maxwell & Moore. The outfit, which will be one of the most modern in the oil district, will include special oil-well tool lathes, heavy drill presses and steam hammers. The same company has ordered from the Railway Materials Company, 249 Monadnock Building, a large Ferguson furnace, designed to use oil fuel.

Several gas engine manufacturers around San Francisco have recently placed orders for Steinlee turret lathes.

Woodworking machinery has been extremely quiet for several months past, and few sales are likely to be closed before the end of the year, but numerous inquiries have recently been received, and a season of considerable activity is expected during the early spring.

Notwithstanding the comparatively light demand for mining machinery in the past season, there is a good outlook for improvement next year. The introduction of electric power and lighting has greatly reduced mine operating expenses, as well as in the operating cost of ore mills, and modern types of mill construction and pumping machinery also tend to reduce expenses. It is accordingly predicted that active development will soon be resumed at many mines which have been partially abandoned owing to the heavy cost of mining by older methods.

It is reported that a new addition will soon be erected at the Pullman car shops near Richmond, Cal.

The Bohm-Rugaard Rotary Engine Company, San Francisco, has been incorporated with a capital stock of \$100,000, by E. A. Bohm, C. F. Klitgaard, H. F. Roberts, J. J. Barnes and L. Rugaard.

The Electric Rotary Drill Company, Los Angeles, Cal., has been incorporated, with a capital stock of \$50,000, by H. A. Bardeen, A. M. Strong and H. G. Palmer.

The Brisco Iron Works, Porterville, Cal., has been incorporated, with a capital stock of \$300,000, by T. A. Brisco, G. V. Reed, H. E. Redmond and M. A. Millbury.

Plans have been drawn for a new power house at Stanford University, Palo Alto, Cal. Additional shop room will also be provided for the engineering department.

It is reported that the Giant Valve Company will install a plant at Richmond, Cal.

The Pacific Porcelain Company, Richmond, Cal., manufacturer of plumbing fixtures, is preparing to double its capacity, and has already let contracts for the buildings.

Several new machines are being installed by the Oakland Paving Brick Company, Decoto, Cal.

The Oakland Brewing & Malting Company is planning to install new machinery in its bottling department at an expense of about \$15,000.

The Oakland Gas Light & Heat Company is completing a large installation in Oakland, including a 16,000 hp. Curtiss steam turbine direct connected to a 12,000 kw. generator.

The American Tool & Specialty Company has been incorporated at Los Angeles, with a capital stock of \$1,000,000, by L. S. McCoy, G. T. Ashley, F. B. Mollski and J. T. Curran.

The California Machinery & Equipment Company has been incorporated at Los Angeles, with a capital stock of \$25,000, by W. V. and A. L. Lewis and others.

V. Etienne & Bro., this city, have taken a contract for equipping a new ice plant at Petaluma, Cal.

The Pacific Mfg. Company, operating one of the largest general woodworking plants in the state at Santa Clara, Cal., is installing an electric motor system throughout its mill, and it is reported that a private generating plant will be installed.

The Fellows Boat Works is installing a large shop at San Diego, Cal. The machines will be operated by individual electric motors.

The Union Ice Company is preparing to install a large hydroelectric plant near Boca, Cal., on the Truckee River.

### Texas

AUSTIN, TEXAS, December 9, 1911.

General business conditions seem to be improving over the State and the Southwest. This is perhaps due largely to the activity that usually takes place just prior to the holiday season. Prospects for an unusually large machinery trade during the early part of the coming year are considered very promising. While money is somewhat scarce in the ordinary channels of business promoters of industrial enterprises of any considerable size are so far meeting with no difficulty in the matter of making financial arrangements for their projects. The new law authorizing the creating of irrigation districts and the construction of such works by means of bond issues is proving a great success in the matter of bringing about land reclamation in the southern and western parts of the State. Many such districts are now in course of formation and the consummation of these projects will involve the purchase of large quantities of machinery.

Travis F. Jones and James A. Logwood, of San Antonio, will install a canning factory near El Campo.

The Texas-Caddo Oil & Development Company has been organized at Dallas with a capital stock of \$50,000. The incorporators are H. T. Taylor, Ephraim Garonzik and H. W. Cutshall.

The Waxahachie Gas Company, Waxahachie, has increased its capital stock from \$125,000 to \$150,000. It will enlarge the scope of its proposed plant.

The Mission Cotton Company, Mission, has increased its capital stock to \$80,000 from \$60,000 and will enlarge its cotton seed oil mill.

The Greenville Boosters' Club is promoting the establishment at Greenville of a large meat packing plant. Considerable progress has been made in the matter of securing the enterprise.

The Temple Gas Light Company, Temple, has let the contract for erecting its engine house and other buildings to D. A. McAlexander, of Temple. The company is laying the pipe for its new distributing system.

The city of Cross Plains is constructing a large dam one mile north of town for the purpose of forming a reservoir for a municipal water supply.

The Price-Booker Mfg. Company, San Antonio, will establish a canning and pickling factory at Alvin. S. D. Price is president.

The City Council of Lone Oak has granted a franchise to J. M. Carsey, of Greenville, W. J. Simpson and J. C. Simpson, of Kaufman, to install an electric light and power plant there.

The Commercial Club of Slaton is promoting the installation here of an electric light plant. It is also arranging for the establishment of an ice factory.

The Farmers' Union Gin & Milling Company, of Stephenville, has been formed with a capital stock of \$15,000. The incorporators are Jonce Lewis, F. F. McInroe, J. R. Rucker and others.

### Eastern Canada

TORONTO, ONT., December 9, 1911.

The state of the import trade is a fair criterion of the general commercial condition in Canada. The imports keep on increasing. In the month of September last their aggregate value was \$42,337,716, as against \$37,312,695 in September, 1910. In the six months ending with September they amounted to \$246,710,687, as against \$219,055,695 in the corresponding period last year. In these totals machinery and equipment from the United States figure largely as also do articles that are themselves the product of manufacturing industry and the material for further manufacturing. Advantage seems to have been taken of lower prices across the line when business there was least active. The purchases of material made by Canadian manufacturers will be helpful in the turning out of contracts booked here at about the same time for finished products that are to be delivered in months to come. There seems reason to believe that Canadian manufacturers gained rather than lost as a consequence of the temporary depression in the United States, as though they had much competition from that quarter, they have still kept up operations to the full capacity of their works. They gained in the lower price of their material. Christmas holidays are approaching, but so far little is heard of the slackening of operations that is usual at this season. The demand seems to be hard to sate. Yet new manufacturing industries continue to spring up and increase competition. Not more, however, than they increase demand, as the new works mean new plant and orders therefor. It begins to appear as if the new unknown quantity of national growth were large enough for any increase of productive capacity the manufacturers of machinery and equipment could bring about. It is to be added that capital shows no hesitation. The influx of it from abroad keeps on, and it is being freely ventured into enterprises of every kind. Ideas of curtailment or retrenchment seem to be very inappropriate at the present time.

The Schacht Motor Car Company of Canada has established its works in a building it has obtained in Hamilton, Ont. It intends to go largely into the manufacture of commercial cars.

The City Council of Kingston, Ont., is asked by the Canadian Locomotive Company to grant it a fixed assessment of \$100,000 for the next ten years. It is preparing to double its plant there. The ratepayers will have a chance to vote on the question about January 15.

At the City Council meeting of Stratford, Ont., a by-law was given its first two readings and will be submitted to the electors in January, providing for a loan of \$10,000 to Paul Bennewitz, of West Toronto. He has purchased the Perth Flax & Cordage Company's factory there and will engage in the manufacture of musical accessories, and will employ forty persons.

The Bell Telephone Company is preparing to erect a building in Guelph, Ont., to cost \$40,000.

The plant of O'Keeffe & Drew, meat packers, is now in operation at Chatham, Ont. The storehouses, refrigerating system, etc., cover about twenty acres.

The improvements to be made in the plant of the E. B. Eddy, Hull, Ont., at a cost of \$500,000, and for the employment of several hundred additional men, include the electrification of the whole plant by means of a hydroelectric power system the company is to establish. Every machine in the company's mills will be run by electricity instead of by water power. The company has also decided to build a new mechanical pulp mill in place of a ground wood pulp mill. This mill will be located adjacent to Ottawa and Hull.

Owing to the success of the Dominion Canners' Company since consolidation a new company with Montreal capitalists on the board of directors is being formed. The name of the company has not yet been decided, but it probably will be the British Canadian Canners' Company, Ltd., and it will start with a capital stock of \$500,000. Those identified with the company include C. H. Cahan, H. A. Lovett, John Black, of the local cotton companies, and Sir H. S. Bate of Ottawa, and H. L. Perchard, of the Lake-of-the-Woods building. The company will erect five canning factories in Ontario.

A. & P. Steven, Ltd., Montreal, has been incorporated with a capital stock of \$50,000 to carry on a general business in elevators and machinery.

The Dominion Rock Drill & Foundry Company,

Montreal, will build a large factory this winter in which to make hoisting engines, etc.

The ratepayers of Exeter, Ont., will vote on a by-law for water works extensions.

The Tuttle-Vailey Mfg. Company is negotiating for a factory site for a foundry in Bridgeburg, Ont.

The Dominion Mahogany & Veneer Company, Montreal, will build an additional factory at Lachine, Que.

Up to December 31, tenders will be received by John Robinson & Sons, Niagara Falls, Ont., for garage equipment, including a small belt-driven air compressor.

The works of the O'Gorman Carriage Company, Preston, Ont., which were recently burned, will be rebuilt in the spring.

P. McCullough, Sherbrooke, Que., is preparing to build a factory in which to make brake shoes for cars, etc.

The Tilbury Handle Company, Tilbury, Ont., is building a factory there.

The O'Keefe Brewing Company, Toronto, is about to build another brewery in that city to cost \$100,000.

The F. C. Burroughs Furniture Company, Toronto, will build a warehouse to cost \$25,000.

The R. S. Williams Piano Company, Toronto, will put up a new building to cost \$65,000.

The Wingham Implement Company is a new company that proposes to establish a factory in Wingham, Ont.

The Conduit Company, Toronto, has given out the contract for building its new factory.

The Lightning Furnace Company, Montreal, is about to build a new foundry at St. John's, Que.

The London Township Council, London, Ont., will install a hydroelectric power service.

The contract for constructing the power house of the hydroelectric plant on Magog River, Magog, Que., has been awarded to the Bishop Construction Company, Montreal, for \$125,000.

The packing factory of the St. Thomas Packing Company, St. Thomas, Ont., has been damaged by fire to the extent of \$12,000. The building will be restored.

Conduits, Ltd., Toronto, has been incorporated with a capital stock of \$1,000,000 to manufacture and deal in wire conduit and other tubing, electrical and gas fixtures.

The Eastern Canada Power Company, Montreal, has been incorporated with a capital stock of \$1,000,000 to carry on business in electric lighting, heating and power.

The Architectural Metal Company, Ottawa, has been incorporated with a capital stock of \$75,000.

Fire on December 6 gutted the premises of the Canadian Cereal & Milling Company's Bloomfield Mills, at Fergus, Ont. The total loss will be about \$10,000, fully covered by insurance. Work will be commenced immediately to rebuild the mill.

The Brunswick-Balke-Collender Company of America, engaged in the manufacture of billiard tables, bowling alleys, etc., will shortly build an \$80,000 factory, employing 150 men, in Toronto.

The Grand Trunk Pacific Railway have awarded a contract to John S. Metcalf & Co., Ltd., Montreal and Chicago, for the design and construction of a 2,500,000-bushel concrete storage elevator at its Mission Island terminal for Fort William, Ontario. The estimated cost of the structure is \$500,000. This is the second storage unit of the new Grand Trunk Pacific grain terminal at the above point, and will bring the storage capacity of the elevator up to a total of 5,750,000 bushels. The ultimate capacity of the grain terminal as laid out by John S. Metcalf Company, Ltd., contemplates a total storage capacity of 40,000,000 bushels.

## Western Canada

WINNIPEG, MAN., December 9, 1911.

The weather is quite mild since the first of December, and had it not been for the cold spell in November it is likely that many lines of industrial work that usually experience a lull in the winter would have continued farther into the winter than they have. The principal drawback to general trade in this part of the country recently has been the congestion in traffic. It has been for some weeks impossible to move freight with any degree of promptness, although the mild conditions of the last couple of weeks has afforded some relief. The outlook for next spring seems to loom up brighter as the year-end approaches. Payments are

improving gradually, but the farmers have been badly delayed in marketing the crop.

A by-law has been carried in Moose Jaw, Sask., to expend \$17,000 on fire alarm extension and the purchase of a steam pumping engine.

A by-law is to be submitted to the ratepayers of Scott, Sask., to raise money for a waterworks plant.

Cushing Bros., Ltd., Calgary, Alberta, will establish a sash and door factory at Red Deer, Alberta in the spring.

It is announced that the Dominion Bridge Company is going to locate its western shops at Calgary Alberta. It is said that this plant will be larger than the one at Winnipeg.

The Council of South Vancouver, B. C., has granted to the South Vancouver Lumber Company permission to erect a sawmill on the Fraser River at that place.

The Coquitlam Lumber Company, Ltd., Coquitlam, B. C., has been incorporated with a capital stock of \$10,000, to carry on business as timber merchant and sawmill proprietor.

George Craddock & Co., Ltd., wire rope and steel manufacturers, Wakefield, Sheffield and London, England, have taken out a license in British Columbia, and have opened an office in Vancouver.

It is again reported that the Hines Lumber Company, which owns a large plant at Virginia, Minn., will build a sawmill at Fort Frances, Western Ontario.

J. A. McAlister, of the North Vancouver Lumber Company, North Vancouver, B. C., has men at work preparing the foundation for a sawmill near that place.

The Belmont Buildings, Ltd., is erecting a building at Victoria, B. C., to cost \$400,000. The Norton Griffiths Company has the contract.

Up to December 15 tenders will be received by the City Council of Victoria, B. C., for the construction of the Sooke Lake water system at a cost of about \$1,500,000.

Up to December 27 tenders will be received by the secretary-treasurer of Lethbridge, Alberta, for the work of constructing a sewage disposal plant.

Gorman, Clancey & Gridley, machinery merchants, have begun to build a warehouse in Bassano, Alberta.

The Riverdale Lumber Company is about to build a box factory in Calgary, Alberta.

A power development to cost \$1,000,000 on Bull River, Fernie, B. C., is contemplated for M. A. Devitt and H. W. McCoy, Chicago. A six-strand duplicate line on steel towers from the plant at Bull River Falls, over Lizard Pass to Fernie and on through Crow's Nest Pass to Frank, \$5,000 per mile. Installation of power plant to generate 10,000 hp. at once.

The ratepayers of Lethbridge, Alberta, will vote on a by-law to raise \$450,000 for a street railway system. \$150,000 to be expended on power plant.

The City Council of Fort William has authorized the Mayor and City Clerk to sign a provisional agreement with W. J. Lindsay, who is forming a company that will trade under the name of the Port Arthur Stove & Mfg. Company with a capital stock of \$500,000. The plant to be erected will be of solid brick and is expected to cost over \$200,000. If the city comes to an agreement, work on the erection of the buildings is to be commenced on June 1 and the plant is to be in full operation within 18 months from that date.

The area to be covered by the new Canadian Pacific Railway shops in Calgary will include 120 acres of land, the large locomotive shop alone, with stalls and pit for 35 engines, will cover six acres of land. There will be 20 buildings, including freight car and engine repair shops and other buildings comprised in a large railway shop yardage, which will make the Calgary shops one of the largest and most up-to-date on the continent of America.

## Government Purchases

WASHINGTON, D. C., Dec. 11, 1911.

The Bureau of Supplies and Accounts, Navy Department, Washington, will open bids January 2, 1912, under schedule 4147, for two water-tube boilers, one for delivery to Norfolk, Va., and one to Puget Sound, Wash., and under schedule 4151, one set coaling gear equipment for delivery to Brooklyn, N. Y.

The office of the Commissioners of the District of Columbia will open bids December 18 for furnishing labor and material to install complete electric lighting system in the James Ormond Wilson School, Washington.

The depot quartermaster, Army Building, New York

City, will open bids December 16, under schedule 267 for furnishing one water tube boiler.

The office of the supervisor of anchorages, Custom House, New York City, will open bids January 12 for furnishing and delivering one new marine type water tube boiler for the United States revenue cutter Hudson.

The United States Engineer Office, Custom House, San Francisco, Cal., will receive bids until December 27 for constructing and equipping two steel hull 20-in. pump dredges.

### Baltimore Industrial Notes

Contractors and fabricators are figuring on a new building for the Virginian Hotel, Lynchburg, Va. The structure is to be of concrete and steel.

The Canton Box Company has awarded a contract for the erection of a brick addition 53 x 90 ft., two stories, to its plant on Boston street. The building will be used for storage purposes and no additional equipment or machinery will be required.

Elliot, Ottenheimer & Elliot have taken permits for the erection of a two-story addition at 2113 to 2117 East Oliver street 45 x 140 ft., of concrete, brick and stone, and to be heated by steam. It will be used for the manufacture of cigars.

The United Railways Company has purchased a tract of land on Harford road, on which it will erect a large car barn and station. Tentative plans call for an expenditure of \$100,000 for the new building and equipment.

Haskell & Barnes have completed plans and contractors are figuring on the cost of erection of a two-story fireproof garage to be erected at North and Fulton avenues for W. J. Tickner & Sons. Plans call for a brick, stone and concrete structure with cement floors.

It is reported that the Terminal Freezing & Heating Company, successor to the Baltimore Refrigerating & Heating Company, will shortly make extensive improvements to its plant on South Eutaw street.

A. S. Goldsborough, secretary of the Municipal Factory Site Commission, reports negotiations pending by Pittsburgh interests for a site for the erection of a steel casting plant. Several locations are being considered, but he feels assured that the new industry will be secured by Baltimore. A large concern engaged in the fertilizer business is also considering the purchase of a site of 16 acres on which to erect a new plant.

The Baltimore Gas Appliance & Mfg. Company started operations during the month at its plant at Bayard and Nanticoke streets. The foundry department is operating at comparatively good capacity, while the various other departments are being put in operation as fast as the work goes forward. Practically all the equipment needs have now been acquired. By January 1 the company expects to have all departments in full operation. Regular deliveries of gas heaters, ranges, etc., are expected to be made during the current month.

The Baltimore Water Board has decided to go ahead with plans for the construction of a new dam 186 ft. high, 2100 ft. north of the present Lock Raven dam. It will give a storage capacity of 2,000,000,000 gal. and the foundations will be constructed of such size as will enable them to support a dam at an elevation of 275 ft. and having a storage capacity of 65,000,000,000 gal., should it be necessary to increase the city water supply to that extent.

Dietrich Brothers report inquiries for structural work quieter, those coming out being confined to propositions of the smaller class. The firm has practically completed the structural work on the Baltimore Bargain House and has the steel work of the Maryland Casualty Company's addition 60 per cent. completed. Contracts for several small buildings, requiring from 25 to 50 tons for local construction, have been closed, together with some small work in the South.

The Interstate Chemical Corporation of Virginia, with a capital stock of \$7,250,000, has been organized and will acquire the interests of A. B. Chisholm, a prominent fertilizer operator at Charleston and Greenwood, S. C., and Tampa, Fla., the Germofer Mfg. Company of South Carolina, and the Tilghman Phosphate Company of Florida. Plans have been made for the erection of additional fer-

tilizer plants at Charlotte, N. C., and Macon, Ga. A. B. Chisholm, Charleston, S. C., is president of the corporation and can furnish information regarding the proposed new plants.

Frank & Cavanaugh, architects, have completed plans for the erection of a large building to be used as a warehouse and paint factory by Hirshberg, Hollender & Co. on Warner street near Ostend street. The building will probably be but 19 x 71 ft., one story, although built to enable additional stories to be added. While no additional equipment will be required at this time, purchases of mixing machinery are contemplated in the near future.

The Chesapeake Iron Works, while busy in its estimating department, finds resultant orders light. The bulk of the demand has been for small building and ornamental iron work. One order for a moderate sized mill building in Norfolk, Va., is noted. Plant operations continue on an irregular basis.

### Tin Plate Imports and Exports

The figures of the Bureau of Statistics, Department of Commerce and Labor, show a marked change in the trade movements of tin plate. The October imports and exports, stated in pounds, in the last three years were as follows:

October.	Imports.	Exports.
1909.....	11,117,035	1,414,110
1910.....	3,737,997	1,236,141
1911.....	1,286,877	15,941,893

The marked decline in the imports in the last two years, as explained in a statement recently issued by the Bureau of Statistics, is due to the high price of tin plates in foreign countries, coupled with relatively lower prices in the United States. In October, 1911, the average import price of tin plates was 3.8 cents per lb., against 3.2 cents in October of last year, and 2.7 cents in October, 1909. As the value of imported articles is based upon their actual wholesale price in the country from which exported to the United States, the figures quoted would seem to indicate a steady rise in the foreign price of tin plates, due in part to the rapid growth of the canning industry in all parts of the world. In the United States alone the value of canned and preserved products has increased from \$38,000,000 in 1890 to \$157,000,000 in 1909.

Most of the tin plate imported in the recent years has been for use in the manufacture of cans and other articles used in the export trade, in which case 99 per cent of the duty was refunded under the drawback law. The marked advance in price of tin plates abroad has apparently led to the substitution of domestic tin plate for the foreign article for use in exportation.

**Employees' Compensation for Accidents.**—The National Civic Federation expects to bring before the various State legislatures this winter its model bill for the compulsory compensation of employees for injuries due to industrial accidents. The Federation is co-operating with the Workmen's Compensation Committee of the Uniform State Law Commissioners and a similar committee of the American Bar Association. Special activity in this matter is reported in West Virginia, Texas, Colorado, California, Maryland, Michigan, North Dakota, Montana, Connecticut, Rhode Island, Missouri, Indiana, and Iowa. The principles of the bill have been adopted by the Congressional Commission on Employers' Liability and Workmen's Compensation.

S. Weber & Son, dealers in scrap, Louisville, Ky., have purchased the old Belknap cement plant of the Union Cement & Lime Company. The purchase includes a large quantity of second-hand machinery, steel rails, locomotives, carriers, cement plant equipment, a large incline, and a considerable tonnage of scrap. The plant is one of the historic industries of Louisville. A large force of men will be put to work to wreck it. The purchase is one of the many transactions of a similar character which this firm has put through in the past few months. S. Weber & Son are among the largest dealers in scrap material of all kinds.

## Current Metal Prices.

The following quotations are for small lots, New York. Wholesale prices, at which large lots only can be bought, are given elsewhere in our weekly report.



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